



This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

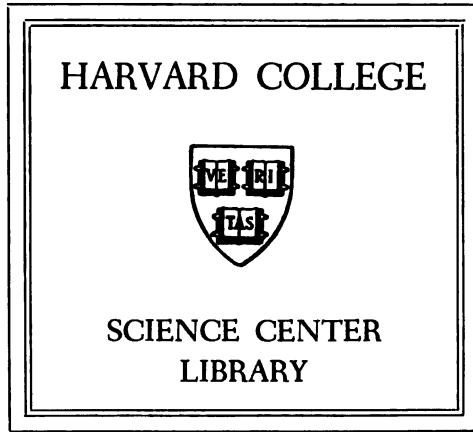
- + *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.
- + *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.
- + *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.
- + *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at <http://books.google.com/>

~~Sci 520.5 (1867)~~

Per 2208



Oct 11/68

3

32 1/2 55

Sir,

I have the honor to inform
The American Ephemeris
for 1868

presented to the Library of H^o
by authority of the Bureau of Navigation
by mail to your address.

I am, very respectfully,

Your obedient

To
Rev J. Langdon Fibley
Librarian of Harvard
Cambridge

THE
AMERICAN NAUTICAL ALMANAC

MAY BE OBTAINED OF

GEORGE W. BLUNT, New York,

GENERAL AGENT FOR THE UNITED STATES,

AND ALSO OF

BATH, ME.
ZINA HYDE & CO.,
HOWLAND AND DONNELL.

PORTLAND, ME.
LOWELL AND SENTER,
E. P. BANKS.

PORTSMOUTH, N. H.
J. H. FOSTER.

SALEM, MASS.
GEORGE CREAMER,
IVES AND SMITH,
H. WHIPPLE AND SON.

CAMBRIDGE, MASS.
SEVER AND FRANCIS.

BOSTON, MASS.
S. THAXTER AND SON,
BOND AND SONS,
F. W. LINCOLN, JR. & CO.

NEW BEDFORD, MASS.
C. TABER & CO.,
JOHN KEHEW.

NANTUCKET, MASS.
THOMAS A. GARDNER.

PROVIDENCE, R. I.
WILLIAM EARLE,
A. H. STILLWELL,
CROWELL AND RICH,
CLEAVELAND AND PURINTON.

NEWPORT, R. I.
GEORGE BOWEN & CO.,
T. & J. COGGESHALL.

NEW LONDON, CONN.
GORDON AND BACON,
BOLLES & CO.

NEW HAVEN, CONN.
PAUL ROESSLER,
E. PENDLETON & CO.

SAG HARBOR, L. I.
GEORGE W. TABOR.

NEW YORK.
MICHAEL RUPP,
JOHN OAKES,
D. EGGERT AND SON.

PHILADELPHIA.
PARRY AND McMILLAN,
C. F. HELFFRICHT,
W. H. C. RIGGS.

BALTIMORE.
CUSHINGS AND BAILEY,
PETER WALTHER,
A. STOWELL, JR.

NORFOLK, VA.
C. HALL & CO.,
VICKERY & CO.,
W. P. GRIFFITH.

WILMINGTON, N. C.
J. H. NEFF,
W. K. COVELL.

CHARLESTON, S. C.
H. E. VINCENT,
C. H. WEST AND SON,
EDWARD CANDLER,
JOHN RUSSELL.

SAVANNAH.
CLAGHORN AND CUNNINGHAM,
ROBERT HARDIE & CO.

MOBILE.
C. BREWER,
DESHON AND MYERS,
L. MERCHANT & CO.,
S. H. GOETZEL & CO.

NEW ORLEANS.
L. FRIGERIO, JR.,
ALEX. LEVY & CO.,
RILEY AND STEVENS.

WASHINGTON, D. C.
TAYLOR AND MAURY.

ALEXANDRIA, VA.
ROBERT BELL.

PENSACOLA, FLA.
KNOWLES AND WILKINS.

HALIFAX, N. S.
E. G. FULLER,
JAMES DONOHUE.

SAN FRANCISCO, CAL.
THOMAS TENNENT,
H. H. BANCROFT & CO.,
A. ROMAN & CO.

LONDON.
J. D. POTTER.

A MERICAN EPHEMERIS

AND

NAUTICAL ALMANAC.

FOR THE YEAR

1 8 6 8.

PUBLISHED BY AUTHORITY OF THE SECRETARY OF THE NAVY.

BUREAU OF NAVIGATION,
WASHINGTON.

1866.

~~130.4~~

~~Soc 390.5 (1868)~~

Per 2208



1866. Nov. 22

16
9

4. Bureau of Navigation
Library

J. H. Coffin

Am. Nautical Almanac.

NOTICE.

The Office of the American Ephemeris and Nautical Almanac has been transferred from Cambridge, Mass., to Washington, D. C.

UNIVERSITY PRESS:
WELCH, BIGELOW, AND COMPANY,
CAMBRIDGE.

11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31

P R E F A C E .

THE preparation of the American Ephemeris and Nautical Almanac was begun in the latter part of the year 1849, in accordance with an act of Congress, approved on the 3d of March of that year. An account of this preparation and the values of the constants adopted will be found in the Preface and Appendix of the first volume, for the year 1855.

In the volume for the year 1865 several important changes were introduced. The Star Ephemeris was greatly enlarged, and the space given to Moon Culminations and Moon-Culminating Stars was greatly reduced. Mean Solar Time, instead of Sidereal Time, was used in the dates of the Ephemeris for the Meridian of Washington, and BESSEL's notation in the formulas for star reductions was adopted instead of BAILY'S. Other changes of less importance, mentioned in the Explanation and Appendix, were made.

In the volumes for 1867 and 1868 the constants for facilitating the reduction of the Fixed Stars, p. 254, are given for every day, instead of for every fifth day. Tables for correcting *A* and *B* for small terms of nutation, and a list of occultations visible in the territory of the United States west of the Mississippi River, have been added to the Appendix.

The volume for 1868 has been prepared mainly under the superintendence of Prof. JOSEPH WINLOCK, now the Director of Harvard College Observatory.

J. H. C. COFFIN,
Prof. of Math. U. S. Navy, Superintendent.

Washington, September 1, 1866.

CORRECTIONS.

EPHEMERIS FOR 1866.

To be applied to the Right Ascensions and Declinations of Jupiter.

	In R. A.	In Dec.		In R. A.	In Dec.
1866. Feb. 5	+0.01		1866. July 25	-0.02	-0.1
15	.02		Aug. 4	.06	.2
25	.03		14	.10	.3
Mar. 7	.03		24	.14	.3
17	.04		Sept. 3	.18	.4
27	.05		13	.20	.4
April 6	.06	+0.1	23	.22	.5
16	.07	.1	Oct. 3	.23	.6
26	.09	.2	13	.24	.7
May 6	.10	.3	23	.25	.8
16	.11	.4	Nov. 2	.24	.7
26	.11	.5	12	.22	.6
June 5	.10	.5	22	.20	.5
15	.09	.4	Dec. 2	.18	.5
25	.08	.3	12	.15	.4
July 5	.05	+0.1	22	.13	.3
15	+0.02		32	-0.11	-0.3

- Page 4, Mean Time of Sidereal 0^h, Jan. 28, for 39^m read 29^m.
 " 300, R. A. of τ Leonis, Dec. 25, " 5^h.06 " 6^h.06.
 " 332, R. A. of No. 79, " 7^m " 6^m.
 " " Dec. of No. 79, " 32^m.1 " 32^m.7.
 " 333, An. Var. of Dec. of No. 126, " 4^m.05 " 4^m.03.
 " 334, R. A. of No. 161, " 55^m.79 " 55^m.84.
 " 431, Aug. 4, the Southern Limiting Parallel of α Tauri should be +29^o.
 " 504, line 33, *d*, for 22^m read 23^m.
 " 504, 505, 506, add 47^m.4 to the times $\zeta - d$, $T - d$, and of Immersion and Emersion.

EPHEMERIS FOR 1867.

To be applied to the Right Ascensions of δ Ursæ Minoris, pp. 269 - 271.

1867. Jan. 0.0	-0.09	1867. May 19.5	+0.11	1867. Oct. 6.2	-0.02
19.9	.08	June 8.5	.12		.06
Feb. 8.8	.06	28.4	.12	Nov. 15.1	.10
28.8	-0.02	July 18.4	.11	Dec. 5.0	.11
Mar. 20.7	+0.01	Aug. 7.3	.09	24.9	.12
April 9.7	.05	27.3	.06	1868. Jan. 13.9	-0.12
29.6	+0.08	Sept. 16.2	+0.02		

EPHEMERIS FOR 1867. First Edition.

Page 273, 274, R. A. of δ Ursæ Minoris,	for 1 ^h	read 18 ^h .		
" 279, Diff. of R. A. of 48 Cephei, Jan. 0	" -50	" -60.		
" 288, R. A. of α Cephei, Dec. 26,	" 14 ^h .12	" 13 ^h .12.		
" " " " " 36,	" 13 ^h .65	" 12 ^h .65.		
" 290, Mean Solar date, σ Octantis,	" Mar. 11.7	" Mar. 11.8.		
" 339, R. A. of No. 92,	" 22 ^h .71	" 22 ^h .74.		
" " An. Var. of Dec. of No. 101,	" 18 ^m .31	" 18 ^m .34.		
Page 391, Jan. 20.5,	Z' should be 6587.	Page 398, Aug. 14.5,	X' should be 3709.	
" 392, Feb. 1.5,	Z' " 2199.	" " 25.0, 50' in 1	" 48'.	
" " 5.5,	X' " 4264.	" " 25.5,	X' " 7718.	
" 393, Mar. 24.0,	Y' " 6243.	" 399, Sept. 17.0, 16' in 1	" 18'.	
" 395, May 3.5,	X' " 7427.	" " 17.5, 46' in 1	" 47'.	
" 396, June 8.5,	Y' " 4494.	" 400, Oct. 4.0, 60' in 1	" 59'.	
" " 7.5,	Z' " 6422.	" " 4.0,	Y' " 8921.	
" " 16.5,	Z' " 2335.	" 402, Dec. 19.5,	Y' " 7570.	
" 397, July 24.0,	X' " 1565.			

CONTENTS.

Chronological Eras and Cycles	Page vii
Symbols and Abbreviations	viii

EPHEMERIS FOR THE MERIDIAN OF GREENWICH.

Ephemeris of the Sun	Page of the Month. I.
Ephemeris of the Moon	IV.
Lunar Distances	XIII. Page
Ephemerides of the Planets, Venus — Saturn	218
Sun's Coördinates	242
Moon's Longitude	245

EPHEMERIS FOR THE MERIDIAN OF WASHINGTON.

Obliquity of the Ecliptic, &c.	250
Fixed Stars :	
Logarithms of <i>A, B, C, D</i> , for reducing the Places of,	251
Constants <i>E, f, G, H</i> , &c. for reducing the Places of,	254
Bessel's Formulas of Reduction	261
Mean Places for 1868.0	262
Apparent Places of Circumpolar Stars	266
Apparent Places of Time Stars	291
Ephemeris of the Sun	328
Moon Culminations	334
Moon-Culminating Stars	337
Moon's Semidiameter and Horizontal Parallax	341
Moon's Phases	345
Moon's Equator	346
Ephemerides of the Planets, Mercury — Neptune	347
Horizontal Parallaxes and Semidiameters of the Planets	389
Sun's Coördinates	391
Heliocentric Coördinates of the Planets	403
Eclipses and transit of Mercury	411
Occultations, Elements for the calculation of,	418
" visible at Washington	461
Jupiter's Satellites	465
Saturn's Ring, Discs of Venus and Mars	499
Phenomena, Planetary Constellations	500
Latitudes and Longitudes of Observatories	502
Use of the Tables	504

APPENDIX.

Construction of the Ephemerides	1
Table for the Libration of the Moon	6
Table of Corrections for Second Differences in Moon's Motion	7
Table for converting Sidereal into Mean Solar Time, and the Reverse	8
Table giving Corrections for Seven Polar Stars	14
Tables giving corrections of <i>A</i> and <i>B</i>	15
Occultations visible West of the Mississippi River in 1867	17

CHRONOLOGICAL ERAS AND CYCLES.

CHRONOLOGICAL ERAS.

THE YEAR 1868, WHICH COMPRISES THE LATTER PART OF THE 92D AND THE BEGINNING OF THE 93D YEAR OF THE INDEPENDENCE OF THE UNITED STATES OF AMERICA, CORRESPONDS TO

The year 6581 of the Julian Period;

“ 7376 – 77 of the Byzantine era;

“ 5628 – 29 of the Jewish era;

“ 2621 since the foundation of Rome, according to Varro;

“ 2615 since the beginning of the era of Nabonassar, which has been assigned to Wednesday, the 26th of February, of the 3967th year of the Julian Period, corresponding according to the chronologists to the 747th, and according to the astronomers to the 746th year before the birth of Christ;

“ 2644 of the Olympiads, or the fourth year of the 661st Olympiad, commencing in July, 1865, if we fix the era of the Olympiads at 775½ years before Christ, or near the beginning of July of the year 3938 of the Julian Period;

“ 2180 of the Grecian era, or the era of the Seleucidæ;

“ 1584 of the era of Diocletian.

The year 1285 of the Mohammedan era, or the era of the Hegira, begins on the 24th of April, 1868.

The first day of January of the year 1868 is the 2,403,333d day since the commencement of the Julian Period.

CHRONOLOGICAL CYCLES.

Dominical Letters	E, D	Solar Cycle	1
Epact	6	Roman Indiction	11
Lunar Cycle or Golden Number	7	Julian Period	6581

SYMBOLS AND ABBREVIATIONS.

SIGNS OF THE PLANETS, &c.

☉	The Sun.	♂	Mars.
☾	The Moon.	♃	Jupiter.
☿	Mercury.	♄	Saturn.
♀	Venus.	♅	Uranus.
♁ or ♂	The Earth.	♆	Neptune.

SIGNS OF THE ZODIAC.

Spring signs.	{	1.	♈	Aries.	Autumn signs.	{	7.	♎	Libra.
		2.	♉	Taurus.			8.	♏	Scorpio.
		3.	♊	Gemini.			9.	♐	Sagittarius.
Summer signs.	{	4.	♋	Cancer.	Winter signs.	{	10.	♑	Capricornus.
		5.	♌	Leo.			11.	♒	Aquarius.
		6.	♍	Virgo.			12.	♓	Pisces.

ASPECTS.

♌	Conjunction, or having the same Longitude or Right Ascension.			
☐	Quadrature, or differing 90° in	"	"	"
♌	Opposition, or differing 180° in	"	"	"

ABBREVIATIONS.

♊	Ascending Node.	'	Minutes of Arc.
♋	Descending Node.	"	Seconds of Arc.
N.	North.	h	Hours.
E.	East.	m	Minutes of Time.
°	Degrees.	s	Seconds of Time.
W.	West.		

ASTRONOMICAL EPHEMERIS

FOR THE USE OF

NAVIGATORS.

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S						Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, to be added to Apparent Time.	Diff. for 1 hour.
		Apparent Right Ascension.			Diff. for 1 hour.	Apparent Declination.					Diff. for 1 hour.	Semi-diameter.
Wed.	1	^h 18 ^m 45 ^s 20.19	11.045	S. 23° 2' 41".0	11.95	16' 18.39"	71.11	^m 3 ^s 36.65	1.188	
Thur.	2	18 49 45.21	11.030	22 57 40.3	13.10	16 18.39	71.06	4 5.03	1.173	
Fri.	3	18 54 9.84	11.015	22 52 12.0	14.24	16 18.40	71.01	4 33.03	1.157	
Sat.	4	18 58 34.07	10.998	22 46 16.4	15.38	16 18.40	70.96	5 0.63	1.140	
Sun.	5	19 2 57.87	10.980	22 39 53.6	16.50	16 18.39	70.90	5 27.79	1.122	
Mon.	6	19 7 21.22	10.961	22 33 3.9	17.61	16 18.37	70.84	5 54.51	1.103	
Tues.	7	19 11 44.10	10.941	22 25 47.5	18.72	16 18.34	70.78	6 20.76	1.083	
Wed.	8	19 16 6.48	10.919	22 18 4.7	19.82	16 18.31	70.71	6 46.52	1.062	
Thur.	9	19 20 28.35	10.897	22 9 55.5	20.91	16 18.28	70.64	7 11.76	1.040	
Fri.	10	19 24 49.66	10.874	22 1 20.2	21.99	16 18.24	70.57	7 36.45	1.017	
Sat.	11	19 29 10.41	10.850	21 52 19.1	23.06	16 18.19	70.49	8 0.58	0.993	
Sun.	12	19 33 30.59	10.825	21 42 52.5	24.12	16 18.14	70.41	8 24.14	0.968	
Mon.	13	19 37 50.16	10.800	21 33 0.6	25.17	16 18.08	70.32	8 47.09	0.943	
Tues.	14	19 42 9.10	10.774	21 22 43.8	26.21	16 18.01	70.23	9 9.42	0.917	
Wed.	15	19 46 27.41	10.747	21 12 2.2	27.23	16 17.94	70.14	9 31.11	0.890	
Thur.	16	19 50 45.08	10.719	21 0 56.0	28.24	16 17.87	70.05	9 52.16	0.863	
Fri.	17	19 55 2.08	10.691	20 49 25.8	29.24	16 17.79	69.95	10 12.54	0.835	
Sat.	18	19 59 18.38	10.662	20 37 31.8	30.22	16 17.70	69.85	10 32.23	0.806	
Sun.	19	20 3 33.97	10.633	20 25 14.4	31.19	16 17.61	69.75	10 51.21	0.777	
Mon.	20	20 7 48.85	10.603	20 12 34.0	32.15	16 17.51	69.65	11 9.49	0.747	
Tues.	21	20 12 3.00	10.572	19 59 30.8	33.09	16 17.41	69.54	11 27.04	0.716	
Wed.	22	20 16 16.41	10.540	19 46 5.1	34.02	16 17.31	69.44	11 43.85	0.684	
Thur.	23	20 20 29.04	10.508	19 32 17.3	34.93	16 17.20	69.33	11 59.88	0.652	
Fri.	24	20 24 40.88	10.475	19 18 7.8	35.82	16 17.09	69.22	12 15.12	0.619	
Sat.	25	20 28 51.93	10.442	19 3 37.1	36.70	16 16.97	69.11	12 29.57	0.586	
Sun.	26	20 33 2.18	10.408	18 48 45.3	37.56	16 16.86	69.00	12 43.23	0.553	
Mon.	27	20 37 11.62	10.374	18 33 33.1	38.41	16 16.74	68.89	12 56.08	0.519	
Tues.	28	20 41 20.23	10.340	18 18 0.9	39.24	16 16.62	68.78	13 8.11	0.484	
Wed.	29	20 45 28.01	10.305	18 2 8.9	40.05	16 16.49	68.66	13 19.31	0.449	
Thur.	30	20 49 34.95	10.270	17 45 57.6	40.85	16 16.36	68.55	13 29.66	0.414	
Fri.	31	20 53 41.04	10.235	17 29 27.5	41.63	16 16.22	68.43	13 39.17	0.378	
Sat.	32	20 57 46.29	10.200	S. 17 12 38.7	42.39	16 16.08	68.32	13 47.84	0.343	

NOTE. — Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be subtracted from Mean Time.	Diff. for 1 hour.	Sidereal Time.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.			
		^h ^m ^s	^s	[°] ['] ["]	["]	^m ^s	^s	^h ^m ^s
Wed.	1	18 45 19.53	11.045	S. 23 2 41.7	11.95	3 36.59	1.188	18 41 42.94
Thur.	2	18 49 44.45	11.030	22 57 41.2	13.10	4 4.95	1.173	18 45 39.50
Fri.	3	18 54 9.00	11.015	22 52 13.1	14.24	4 32.94	1.157	18 49 36.06
Sat.	4	18 58 33.15	10.998	22 46 17.6	15.38	5 0.53	1.140	18 53 32.62
Sun.	5	19 2 56.87	10.980	22 39 55.0	16.50	5 27.69	1.122	18 57 29.18
Mon.	6	19 7 20.14	10.961	22 33 5.6	17.61	5 54.41	1.103	19 1 25.73
Tues.	7	19 11 42.94	10.941	22 25 49.5	18.72	6 20.65	1.083	19 5 22.29
Wed.	8	19 16 5.25	10.919	22 18 6.9	19.82	6 46.40	1.062	19 9 18.85
Thur.	9	19 20 27.04	10.997	22 9 58.0	20.91	7 11.64	1.040	19 13 15.40
Fri.	10	19 24 48.28	10.874	22 1 23.0	21.99	7 36.32	1.017	19 17 11.96
Sat.	11	19 29 8.96	10.850	21 52 22.2	23.06	8 0.44	0.993	19 21 8.52
Sun.	12	19 33 29.07	10.825	21 42 55.9	24.12	8 24.00	0.968	19 25 5.07
Mon.	13	19 47 48.58	10.800	21 33 4.3	25.17	8 46.95	0.943	19 29 1.63
Tues.	14	19 42 7.46	10.774	21 22 47.8	26.21	9 9.27	0.917	19 32 58.19
Wed.	15	19 46 25.71	10.747	21 12 6.5	27.23	9 30.97	0.890	19 36 54.74
Thur.	16	19 50 43.32	10.719	21 1 0.7	28.24	9 52.02	0.863	19 40 51.30
Fri.	17	19 55 0.26	10.691	20 49 30.8	29.24	10 12.40	0.835	19 44 47.86
Sat.	18	19 59 16.50	10.662	20 37 37.1	30.22	10 32.09	0.806	19 48 44.41
Sun.	19	20 3 32.04	10.633	20 25 20.1	31.19	10 51.07	0.777	19 52 40.97
Mon.	20	20 7 46.88	10.603	20 12 40.0	32.15	11 9.36	0.747	19 56 37.52
Tues.	21	20 12 0.99	10.572	19 59 37.1	33.09	11 26.91	0.716	20 0 34.08
Wed.	22	20 16 14.35	10.540	19 46 11.7	34.02	11 43.72	0.684	20 4 30.63
Thur.	23	20 20 26.94	10.508	19 32 24.2	34.93	11 59.75	0.652	20 8 27.19
Fri.	24	20 24 38.74	10.475	19 18 15.1	35.82	12 14.99	0.619	20 12 23.75
Sat.	25	20 28 49.75	10.442	19 3 44.7	36.70	12 29.45	0.586	20 16 20.30
Sun.	26	20 32 59.97	10.408	18 48 53.3	37.56	12 43.11	0.553	20 20 16.86
Mon.	27	20 37 9.38	10.374	18 33 41.4	38.41	12 55.97	0.519	20 24 13.41
Tues.	28	20 41 17.97	10.340	18 18 9.4	39.24	13 8.00	0.484	20 28 9.97
Wed.	29	20 45 25.73	10.305	18 2 17.8	40.05	13 19.21	0.449	20 32 6.52
Thur.	30	20 49 32.64	10.270	17 46 6.8	40.85	13 29.56	0.414	20 36 3.08
Fri.	31	20 53 38.71	10.235	17 29 36.9	41.63	13 39.08	0.378	20 39 59.63
Sat.	32	20 57 43.94	10.200	S. 17 12 48.4	42.39	13 47.75	0.343	20 43 56.19

NOTE. — The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S					Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal Oh.
		True LONGITUDE.		Diff. for 1 hour.	LATITUDE.				
		λ	λ'						
1	1	280° 25' 20.4	25 26.6	152.92	—0.43	9.9926615	1.6	5 ^h 17 ^m 24.92 ^s	
2	2	281 26 30.5	26 36.5	152.91	0.55	.9926588	0.6	5 13 29.01	
3	3	282 27 40.2	27 46.0	152.89	0.64	.9926584	0.4	5 9 33.10	
4	4	283 28 49.5	28 55.2	152.88	0.71	.9926605	1.4	5 5 37.19	
5	5	284 29 58.5	30 4.0	152.86	0.76	.9926651	2.5	5 1 41.27	
6	6	285 31 7.1	31 12.5	152.85	0.78	.9926722	3.6	4 57 45.36	
7	7	286 32 15.3	32 20.5	152.83	0.77	.9926820	4.7	4 53 49.45	
8	8	287 33 23.1	33 28.1	152.82	0.73	.9926946	5.9	4 49 53.54	
9	9	288 34 30.6	34 35.4	152.80	0.66	.9927101	7.1	4 45 57.62	
10	10	289 35 37.8	35 42.5	152.79	0.57	.9927284	8.3	4 42 1.71	
11	11	290 36 44.7	36 49.3	152.78	0.46	.9927496	9.4	4 38 5.80	
12	12	291 37 51.4	37 55.8	152.77	0.34	.9927736	10.5	4 34 9.89	
13	13	292 38 57.8	39 2.0	152.75	0.21	.9928002	11.6	4 30 13.98	
14	14	293 40 3.9	40 7.9	152.74	—0.07	.9928295	12.7	4 26 18.07	
15	15	294 41 9.8	41 13.7	152.73	+0.06	.9928613	13.8	4 22 22.16	
16	16	295 42 15.5	42 19.3	152.72	0.17	.9928955	14.8	4 18 26.25	
17	17	296 43 20.9	43 24.5	152.71	0.26	.9929320	15.7	4 14 30.33	
18	18	297 44 26.1	44 29.5	152.70	0.34	.9929708	16.6	4 10 34.42	
19	19	298 45 31.0	45 34.3	152.69	0.39	.9930116	17.4	4 6 38.51	
20	20	299 46 35.4	46 38.6	152.67	0.40	.9930543	18.2	4 2 42.60	
21	21	300 47 39.3	47 42.4	152.65	0.39	.9930987	18.9	3 58 46.69	
22	22	301 48 42.7	48 45.6	152.62	0.35	.9931447	19.6	3 54 50.78	
23	23	302 49 45.5	49 48.2	152.59	0.28	.9931924	20.2	3 50 54.87	
24	24	303 50 47.5	50 50.1	152.56	0.18	.9932416	20.8	3 46 58.96	
25	25	304 51 48.7	51 51.2	152.53	+0.06	.9932923	21.4	3 43 3.06	
26	26	305 52 48.9	52 51.3	152.49	—0.07	.9933444	22.0	3 39 7.15	
27	27	306 53 48.1	53 50.3	152.44	0.20	.9933979	22.6	3 35 11.24	
28	28	307 54 46.2	54 48.2	152.39	0.33	.9934529	23.2	3 31 15.33	
29	29	308 55 43.1	55 45.0	152.34	0.45	.9935095	23.9	3 27 19.42	
30	30	309 56 38.8	56 40.6	152.29	0.55	.9935679	24.6	3 23 23.50	
31	31	310 57 33.1	57 34.8	152.23	0.64	.9936280	25.4	3 19 27.60	
32	32	311 58 26.0	58 27.5	152.18	—0.70	9.9936899	26.2	3 15 31.69	

NOTE: λ corresponds to the true equinox of the date, λ' to the mean equinox of January 0d.

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMI- DIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.	h	m	
1	15 4.8	15 10.0	55 14.1	+1.48	55 33.0	+1.66	4 57.2	1.84	6.5
2	15 15.7	15 22.0	55 54.0	1.84	56 17.0	2.00	5 41.9	1.89	7.5
3	15 28.8	15 36.0	56 42.0	2.15	57 8.6	2.27	6 28.1	1.97	8.5
4	15 43.6	15 51.5	57 36.6	2.37	58 5.6	2.43	7 16.6	2.08	9.5
5	15 59.5	16 7.5	58 35.0	2.45	59 4.2	2.41	8 8.3	2.23	10.5
6	16 15.3	16 22.6	59 32.7	2.31	59 59.7	2.15	9 3.8	2.39	11.5
7	16 29.3	16 35.2	60 24.4	1.93	60 46.1	1.65	10 3.0	2.54	12.5
8	16 40.1	16 43.8	61 4.0	1.31	61 17.5	0.93	11 5.1	2.63	13.5
9	16 46.2	16 47.2	61 26.3	+0.52	61 30.0	+0.09	12 8.3	2.63	14.5
10	16 46.8	16 44.9	61 28.4	-0.35	61 21.6	-0.77	13 10.6	2.55	15.5
11	16 41.7	16 37.3	61 10.0	1.16	60 53.8	1.51	14 10.3	2.42	16.5
12	16 31.9	16 25.5	60 33.8	1.80	60 10.5	2.04	15 6.7	2.28	17.5
13	16 18.5	16 11.0	59 44.7	2.22	59 17.2	2.34	15 59.7	2.15	18.5
14	16 3.3	15 55.4	58 48.7	2.39	58 19.8	2.40	16 50.0	2.05	19.5
15	15 47.6	15 40.0	57 51.1	2.36	57 23.2	2.28	17 38.4	1.99	20.5
16	15 32.7	15 25.9	56 56.5	2.16	56 31.3	2.03	18 25.6	1.95	21.5
17	15 19.5	15 13.6	56 7.8	1.88	55 46.2	1.72	19 12.3	1.95	22.5
18	15 8.2	15 3.4	55 26.6	1.55	55 9.0	1.38	19 59.1	1.96	23.5
19	14 59.2	14 55.5	54 53.5	1.21	54 40.0	1.04	20 46.2	1.97	24.5
20	14 52.4	14 49.8	54 28.4	0.88	54 18.8	0.73	21 33.7	1.98	25.5
21	14 47.7	14 46.0	54 11.0	0.58	54 4.9	0.44	22 21.4	1.98	26.5
22	14 44.8	14 44.0	54 0.4	0.31	53 57.4	-0.19	23 8.8	1.97	27.5
23	14 43.6	14 43.5	53 55.9	-0.07	53 55.7	+0.04	23 55.8	1.94	28.5
24	14 43.8	14 44.4	53 56.8	+0.15	53 59.2	0.25	6		29.5
25	14 45.4	14 46.8	54 2.8	0.35	54 7.7	0.46	0 42.0	1.90	0.7
26	14 48.4	14 50.4	54 13.8	0.56	54 21.2	0.67	1 27.2	1.87	1.7
27	14 52.8	14 55.6	54 30.0	0.79	54 40.2	0.91	2 11.7	1.84	2.7
28	14 58.8	15 2.3	54 51.8	1.03	55 4.9	1.16	2 55.8	1.83	3.7
29	15 6.3	15 10.8	55 19.7	1.29	55 36.0	1.42	3 39.9	1.85	4.7
30	15 15.7	15 21.0	55 53.8	1.56	56 13.3	1.69	4 24.7	1.89	5.7
31	15 26.7	15 32.8	56 34.3	1.81	56 56.8	1.93	5 11.0	1.97	6.7
32	15 39.3	15 46.1	57 20.7	+2.03	57 45.6	+2.11	5 59.7	2.08	7.7

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
WEDNESDAY 1.					FRIDAY 3.				
0	^h 23 ^m 30 ^s 1.70	1.9496	S. 0 39 51.0	9.636	0	^h 1 5 25.51	2.0461	N. 3 24 7.3	10.233
1	23 31 58.70	1.9504	4 30 12.1	9.633	1	1 7 28.38	2.0496	3 34 24.2	10.230
2	23 33 55.75	1.9513	4 20 31.5	9.630	2	1 9 31.45	2.0529	3 44 40.9	10.275
3	23 35 52.85	1.9521	4 10 49.3	9.717	3	1 11 34.72	2.0564	3 54 57.3	10.270
4	23 37 50.00	1.9530	4 1 5.5	9.743	4	1 13 38.21	2.0600	4 5 13.3	10.264
5	23 39 47.21	1.9540	3 51 20.1	9.768	5	1 15 41.92	2.0636	4 15 29.0	10.266
6	23 41 44.48	1.9550	3 41 33.3	9.793	6	1 17 45.84	2.0672	4 25 44.2	10.280
7	23 43 41.81	1.9561	3 31 45.0	9.818	7	1 19 49.98	2.0708	4 35 59.0	10.242
8	23 45 39.21	1.9572	3 21 55.2	9.842	8	1 21 54.35	2.0747	4 46 13.2	10.233
9	23 47 36.68	1.9584	3 12 4.0	9.866	9	1 23 58.95	2.0786	4 56 26.9	10.222
10	23 49 34.22	1.9596	3 2 11.4	9.888	10	1 26 3.77	2.0824	5 6 39.9	10.212
11	23 51 31.83	1.9608	2 52 17.5	9.910	11	1 28 8.83	2.0863	5 16 52.3	10.200
12	23 53 29.52	1.9622	2 42 22.2	9.932	12	1 30 14.13	2.0903	5 27 3.9	10.187
13	23 55 27.29	1.9636	2 32 25.7	9.953	13	1 32 19.67	2.0944	5 37 14.7	10.173
14	23 57 25.15	1.9650	2 22 27.9	9.973	14	1 34 25.46	2.0986	5 47 24.7	10.158
15	23 59 23.10	1.9665	2 12 28.9	9.993	15	1 36 31.49	2.1027	5 57 33.8	10.143
16	0 1 21.13	1.9680	2 2 28.7	10.013	16	1 38 37.78	2.1069	6 7 41.9	10.127
17	0 3 19.26	1.9696	1 52 27.4	10.031	17	1 40 44.32	2.1112	6 17 49.0	10.110
18	0 5 17.48	1.9712	1 42 25.0	10.049	18	1 42 51.12	2.1156	6 27 55.1	10.092
19	0 7 15.80	1.9729	1 32 21.5	10.067	19	1 44 58.18	2.1198	6 38 0.1	10.073
20	0 9 14.23	1.9747	1 22 17.0	10.084	20	1 47 5.50	2.1242	6 48 3.9	10.053
21	0 11 12.77	1.9765	1 12 11.5	10.100	21	1 49 13.09	2.1287	6 58 6.5	10.032
22	0 13 11.41	1.9784	1 2 5.0	10.116	22	1 51 20.95	2.1333	7 8 7.8	10.010
23	0 15 10.17	1.9803	S. 0 51 57.6	10.130	23	1 53 29.09	2.1379	N. 7 18 7.7	9.987
THURSDAY 2.					SATURDAY 4.				
0	0 17 9.04	1.9822	S. 0 41 49.4	10.144	0	1 55 37.50	2.1426	N. 7 28 6.2	9.963
1	0 19 8.03	1.9842	0 31 40.3	10.158	1	1 57 46.19	2.1473	7 38 3.3	9.938
2	0 21 7.15	1.9863	0 21 30.4	10.171	2	1 59 55.17	2.1520	7 47 58.8	9.913
3	0 23 6.39	1.9884	0 11 19.8	10.183	3	2 2 4.43	2.1568	7 57 52.7	9.886
4	0 25 5.76	1.9906	S. 0 1 8.4	10.195	4	2 4 13.98	2.1616	8 7 45.0	9.867
5	0 27 5.26	1.9928	N. 0 9 3.6	10.206	5	2 6 23.82	2.1666	8 17 35.5	9.838
6	0 29 4.90	1.9951	0 19 16.3	10.217	6	2 8 33.96	2.1714	8 27 24.3	9.798
7	0 31 4.68	1.9976	0 29 29.6	10.227	7	2 10 44.39	2.1764	8 37 11.3	9.767
8	0 33 4.60	1.9999	0 39 43.5	10.235	8	2 12 55.13	2.1816	8 46 56.3	9.734
9	0 35 4.67	2.0023	0 49 57.9	10.243	9	2 15 6.17	2.1866	8 56 39.4	9.701
10	0 37 4.88	2.0049	1 0 12.7	10.251	10	2 17 17.52	2.1917	9 6 20.4	9.667
11	0 39 5.25	2.0075	1 10 28.0	10.258	11	2 19 29.18	2.1969	9 15 59.4	9.632
12	0 41 5.78	2.0101	1 20 43.7	10.264	12	2 21 41.15	2.2021	9 25 36.2	9.596
13	0 43 6.46	2.0128	1 30 59.7	10.270	13	2 23 53.43	2.2073	9 35 10.8	9.558
14	0 45 7.31	2.0156	1 41 16.1	10.275	14	2 26 6.03	2.2126	9 44 43.1	9.518
15	0 47 8.33	2.0183	1 51 32.7	10.279	15	2 28 18.95	2.2180	9 54 13.0	9.478
16	0 49 9.51	2.0212	2 1 49.6	10.282	16	2 30 32.19	2.2234	10 3 40.5	9.437
17	0 51 10.87	2.0241	2 12 6.6	10.285	17	2 32 45.76	2.2288	10 13 5.5	9.395
18	0 53 12.40	2.0271	2 22 23.8	10.287	18	2 34 59.65	2.2343	10 22 27.9	9.351
19	0 55 14.11	2.0301	2 32 41.1	10.288	19	2 37 13.87	2.2398	10 31 47.7	9.307
20	0 57 16.01	2.0332	2 42 58.4	10.288	20	2 39 28.43	2.2454	10 41 4.7	9.261
21	0 59 18.09	2.0363	2 53 15.7	10.288	21	2 41 43.32	2.2510	10 50 19.0	9.214
22	1 1 20.37	2.0395	3 3 33.0	10.287	22	2 43 58.55	2.2566	10 59 30.4	9.165
23	1 3 22.84	2.0428	3 13 50.2	10.285	23	2 46 14.12	2.2623	11 8 38.8	9.116
24	1 5 25.51	2.0461	N. 3 24 7.3	10.283	24	2 48 30.02	2.2679	N. 11 17 44.3	9.066

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
-------	------------------	-------------------	--------------	-------------------	-------	------------------	-------------------	--------------	-------------------

SUNDAY 5.

0	2 48 30.02	2.2679	N.11° 17' 44.3	9.065
1	2 50 46.26	2.2736	11 26 46.7	9.014
2	2 53 2.85	2.2793	11 35 46.0	8.961
3	2 55 19.79	2.2851	11 44 42.0	8.907
4	2 57 37.07	2.2909	11 53 34.8	8.851
5	2 59 54.70	2.2968	12 2 24.2	8.794
6	3 2 12.69	2.3026	12 11 10.1	8.736
7	3 4 31.02	2.3085	12 19 52.5	8.677
8	3 6 49.71	2.3144	12 28 31.3	8.616
9	3 9 8.75	2.3204	12 37 6.5	8.555
10	3 11 28.15	2.3264	12 45 37.9	8.492
11	3 13 47.91	2.3323	12 54 5.5	8.427
12	3 16 8.04	2.3383	13 2 29.1	8.361
13	3 18 28.52	2.3443	13 10 48.8	8.294
14	3 20 49.35	2.3503	13 19 4.4	8.226
15	3 23 10.55	2.3563	13 27 15.9	8.158
16	3 25 32.11	2.3623	13 35 23.1	8.085
17	3 27 54.03	2.3683	13 43 26.0	8.013
18	3 30 16.31	2.3744	13 51 24.6	7.939
19	3 32 38.96	2.3805	13 59 18.7	7.864
20	3 35 1.97	2.3866	14 7 8.2	7.787
21	3 37 25.34	2.3926	14 14 53.2	7.710
22	3 39 49.08	2.3987	14 22 33.4	7.630
23	3 42 13.18	2.4047	N.14 30 8.8	7.550

TUESDAY 7.

0	4 44 10.92	2.5489	N.17° 10' 5.0	5.107
1	4 46 44.01	2.5541	17 15 8.0	4.993
2	4 49 17.42	2.5592	17 20 4.1	4.877
3	4 51 51.13	2.5643	17 24 53.3	4.761
4	4 54 25.14	2.5693	17 29 35.4	4.643
5	4 56 59.45	2.5743	17 34 10.4	4.524
6	4 59 34.06	2.5791	17 38 38.2	4.403
7	5 2 8.95	2.5839	17 42 58.8	4.282
8	5 4 44.13	2.5886	17 47 12.1	4.159
9	5 7 19.59	2.5933	17 51 18.0	4.036
10	5 9 55.33	2.5979	17 55 16.4	3.911
11	5 12 31.34	2.6024	17 59 7.3	3.786
12	5 15 7.62	2.6068	18 2 50.7	3.659
13	5 17 44.16	2.6111	18 6 26.4	3.532
14	5 20 20.95	2.6152	18 9 54.5	3.403
15	5 22 57.99	2.6193	18 13 14.8	3.274
16	5 25 35.27	2.6233	18 16 27.3	3.143
17	5 28 12.79	2.6272	18 19 32.0	3.012
18	5 30 50.54	2.6310	18 22 28.7	2.879
19	5 33 28.52	2.6348	18 25 17.5	2.746
20	5 36 6.72	2.6384	18 27 58.2	2.612
21	5 38 45.13	2.6419	18 30 30.9	2.477
22	5 41 23.75	2.6453	18 32 55.5	2.342
23	5 44 2.57	2.6486	N.18 35 11.9	2.206

MONDAY 6.

0	3 44 37.65	2.4107	N.14 37 39.4	7.409
1	3 47 2.48	2.4166	14 45 5.1	7.356
2	3 49 27.67	2.4226	14 52 25.7	7.301
3	3 51 53.22	2.4286	14 59 41.2	7.245
4	3 54 19.13	2.4346	15 6 51.5	7.187
5	3 56 45.40	2.4406	15 13 56.5	7.089
6	3 59 12.03	2.4466	15 20 56.2	6.949
7	4 1 39.02	2.4526	15 27 50.5	6.858
8	4 4 6.37	2.4587	15 34 39.2	6.766
9	4 6 34.07	2.4647	15 41 22.4	6.673
10	4 9 2.13	2.4706	15 47 59.9	6.576
11	4 11 30.54	2.4764	15 54 31.6	6.480
12	4 13 59.30	2.4822	16 0 57.5	6.382
13	4 16 28.41	2.4880	16 7 17.5	6.283
14	4 18 57.86	2.4937	16 13 31.5	6.182
15	4 21 27.66	2.4995	16 19 39.4	6.081
16	4 23 57.80	2.5053	16 25 41.2	5.977
17	4 26 28.28	2.5109	16 31 36.7	5.873
18	4 28 59.10	2.5163	16 37 26.0	5.767
19	4 31 30.25	2.5219	16 43 8.9	5.661
20	4 34 1.73	2.5274	16 48 45.3	5.553
21	4 36 33.54	2.5329	16 54 15.2	5.444
22	4 39 5.68	2.5383	16 59 38.5	5.333
23	4 41 38.14	2.5437	17 4 55.1	5.221
24	4 44 10.92	2.5489	N.17 10 5.0	5.107

WEDNESDAY 8.

0	5 46 41.58	2.6517	N.18 37 20.2	2.069
1	5 49 20.78	2.6548	18 39 20.2	1.991
2	5 52 0.16	2.6577	18 41 11.9	1.793
3	5 54 39.71	2.6606	18 42 55.3	1.664
4	5 57 19.43	2.6633	18 44 30.4	1.514
5	5 59 59.31	2.6659	18 45 57.1	1.374
6	6 2 39.34	2.6683	18 47 15.3	1.233
7	6 5 19.52	2.6707	18 48 25.0	1.092
8	6 7 59.83	2.6729	18 49 26.3	0.950
9	6 10 40.27	2.6751	18 50 19.1	0.808
10	6 13 20.84	2.6770	18 51 3.3	0.666
11	6 16 1.52	2.6788	18 51 39.0	0.523
12	6 18 42.30	2.6804	18 52 6.1	0.380
13	6 21 23.18	2.6820	18 52 24.6	0.236
14	6 24 4.16	2.6835	18 52 34.4	0.092
15	6 26 45.22	2.6850	18 52 35.6	0.032
16	6 29 26.36	2.6862	18 52 28.2	0.196
17	6 32 7.57	2.6873	18 52 12.1	0.340
18	6 34 48.84	2.6882	18 51 47.4	0.484
19	6 37 30.16	2.6891	18 51 14.0	0.629
20	6 40 11.53	2.6898	18 50 31.9	0.773
21	6 42 52.94	2.6903	18 49 41.1	0.918
22	6 45 34.37	2.6906	18 48 41.7	1.063
23	6 48 15.82	2.6909	18 47 33.6	1.208
24	6 50 57.29	2.6911	N.18 46 16.8	1.353

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
THURSDAY 9.					SATURDAY 11.				
0	h m s	s	N. 18° 46' 16.8"	1.363	0	h m s	s	N. 15° 4' 44.3"	7.534
1	6 50 57.29	2.6911	18 44 51.3	1.497	1	8 57 59.94	2.5626	14 57 9.2	7.536
2	6 53 38.76	2.6912	18 43 17.2	1.641	2	9 0 33.55	2.5678	14 49 28.0	7.736
3	6 56 20.23	2.6910	18 41 34.4	1.785	3	9 3 6.88	2.5680	14 41 40.8	7.835
4	6 59 1.69	2.6908	18 39 43.0	1.929	4	9 5 39.92	2.5681	14 33 47.8	7.932
5	7 1 43.13	2.6904	18 37 43.0	2.073	5	9 8 12.66	2.5682	14 25 49.0	8.028
6	7 4 24.54	2.6899	18 35 34.3	2.216	6	9 10 45.10	2.5689	14 17 44.4	8.123
7	7 7 5.92	2.6893	18 33 17.0	2.359	7	9 13 17.24	2.5693	14 9 34.2	8.216
8	7 9 47.26	2.6886	18 30 51.2	2.501	8	9 15 49.08	2.5691	14 1 18.5	8.307
9	7 12 28.55	2.6877	18 28 16.9	2.643	9	9 18 20.61	2.5690	13 52 57.3	8.396
10	7 15 9.78	2.6867	18 25 34.0	2.785	10	9 20 51.83	2.5178	13 44 30.8	8.486
11	7 17 50.95	2.6855	18 22 42.7	2.926	11	9 23 22.75	2.5126	13 35 59.0	8.573
12	7 20 32.04	2.6843	18 19 42.9	3.067	12	9 25 53.35	2.5074	13 27 22.1	8.658
13	7 23 13.06	2.6829	18 16 34.7	3.207	13	9 28 23.64	2.5022	13 18 40.1	8.743
14	7 25 53.99	2.6813	18 13 18.1	3.347	14	9 30 53.61	2.4969	13 9 53.0	8.825
15	7 28 34.82	2.6796	18 9 53.1	3.486	15	9 33 23.27	2.4917	13 1 1.0	8.906
16	7 31 15.55	2.6779	18 6 19.8	3.624	16	9 35 52.61	2.4864	12 52 4.3	8.985
17	7 33 56.17	2.6761	18 2 38.2	3.762	17	9 38 21.64	2.4811	12 43 2.9	9.063
18	7 36 36.68	2.6741	17 58 48.4	3.898	18	9 40 50.35	2.4758	12 33 56.8	9.139
19	7 39 17.06	2.6719	17 54 50.4	4.034	19	9 43 18.73	2.4704	12 24 46.2	9.214
20	7 41 57.31	2.6697	17 50 44.3	4.169	20	9 45 46.79	2.4650	12 15 31.1	9.286
21	7 44 37.42	2.6673	17 46 30.1	4.304	21	9 48 14.53	2.4596	12 6 11.7	9.356
22	7 47 17.39	2.6648	17 42 7.8	4.438	22	9 50 41.95	2.4542	11 56 48.1	9.426
23	7 49 57.30	2.6622	N. 17° 37' 37.5"	4.571	23	9 53 9.04	2.4488	N. 11° 47' 20.3"	9.497
24	7 52 36.86	2.6596				9 55 35.81	2.4434		
FRIDAY 10.					SUNDAY 12.				
0	7 55 16.35	2.6568	N. 17° 32' 59.3"	4.708	0	9 58 2.25	2.4380	N. 11° 37' 48.4"	9.564
1	7 57 55.67	2.6539	17 28 13.2	4.834	1	10 0 28.37	2.4326	11 28 12.5	9.630
2	8 0 34.82	2.6509	17 23 19.2	4.964	2	10 2 54.17	2.4272	11 18 32.8	9.694
3	8 3 13.78	2.6478	17 18 17.5	5.093	3	10 5 19.65	2.4218	11 8 49.3	9.757
4	8 5 52.55	2.6446	17 13 8.1	5.221	4	10 7 44.80	2.4164	10 59 2.0	9.817
5	8 8 31.13	2.6413	17 7 51.0	5.348	5	10 10 9.63	2.4111	10 49 11.2	9.877
6	8 11 9.50	2.6378	17 2 26.3	5.474	6	10 12 34.14	2.4058	10 39 16.8	9.935
7	8 13 47.67	2.6343	16 56 54.1	5.599	7	10 14 58.33	2.4004	10 29 19.0	9.992
8	8 16 25.62	2.6307	16 51 14.4	5.723	8	10 17 22.19	2.3951	10 19 17.8	10.047
9	8 19 3.36	2.6271	16 45 27.3	5.846	9	10 19 45.73	2.3897	10 9 13.4	10.099
10	8 21 40.87	2.6233	16 39 32.9	5.967	10	10 22 8.96	2.3844	9 59 5.9	10.151
11	8 24 18.16	2.6195	16 33 31.3	6.087	11	10 24 31.86	2.3791	9 48 55.3	10.202
12	8 26 55.21	2.6155	16 27 22.5	6.206	12	10 26 54.45	2.3738	9 38 41.7	10.251
13	8 29 32.02	2.6115	16 21 6.6	6.324	13	10 29 16.72	2.3685	9 28 25.2	10.298
14	8 32 8.59	2.6074	16 14 43.6	6.440	14	10 31 38.67	2.3633	9 18 5.9	10.344
15	8 34 44.91	2.6032	16 8 13.7	6.556	15	10 34 0.31	2.3581	9 7 43.9	10.389
16	8 37 20.98	2.5990	16 1 36.9	6.670	16	10 36 21.64	2.3529	8 57 19.2	10.432
17	8 39 56.79	2.5947	15 54 53.3	6.783	17	10 38 42.66	2.3477	8 46 52.0	10.474
18	8 42 32.34	2.5903	15 48 3.0	6.894	18	10 41 3.36	2.3425	8 36 22.4	10.514
19	8 45 7.62	2.5858	15 41 6.0	7.004	19	10 43 23.75	2.3373	8 25 50.3	10.553
20	8 47 42.64	2.5813	15 34 2.5	7.112	20	10 45 43.84	2.3322	8 15 16.0	10.590
21	8 50 17.38	2.5767	15 26 52.4	7.220	21	10 48 3.63	2.3272	8 4 39.5	10.627
22	8 52 51.85	2.5721	15 19 36.0	7.326	22	10 50 23.11	2.3222	7 54 0.8	10.661
23	8 55 26.04	2.5674	15 12 13.3	7.431	23	10 52 42.29	2.3172	7 43 20.1	10.694
24	8 57 59.94	2.5626	N. 15° 4' 44.3"	7.534	24	10 55 1.17	2.3122	N. 7° 32' 37.5"	10.726

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
MONDAY 13.					WEDNESDAY 15.				
0	10 55 1.17	2.3122	N. 7° 32' 37.5	10.796	0	12 41 4.56	2.1264	S. 1° 15' 20.3	10.849
1	10 57 19.75	2.3073	7 21 53.0	10.767	1	12 43 12.00	2.1238	1 26 10.6	10.827
2	10 59 38.04	2.3024	7 11 6.7	10.766	2	12 45 19.29	2.1201	1 36 59.5	10.804
3	11 1 56.04	2.2975	7 0 18.7	10.814	3	12 47 26.42	2.1176	1 47 47.0	10.780
4	11 4 13.74	2.2926	6 49 29.1	10.840	4	12 49 33.39	2.1150	1 58 33.1	10.755
5	11 6 31.15	2.2878	6 38 37.9	10.865	5	12 51 40.22	2.1126	2 9 17.7	10.730
6	11 8 48.28	2.2830	6 27 45.3	10.868	6	12 53 46.90	2.1102	2 20 0.7	10.704
7	11 11 5.12	2.2782	6 16 51.3	10.911	7	12 55 53.44	2.1078	2 30 42.1	10.677
8	11 13 21.68	2.2736	6 5 56.0	10.932	8	12 57 59.84	2.1054	2 41 21.9	10.649
9	11 15 37.96	2.2690	5 54 59.5	10.962	9	13 0 6.10	2.1030	2 52 0.0	10.620
10	11 17 53.96	2.2644	5 44 1.8	10.970	10	13 2 12.23	2.1011	3 2 36.3	10.591
11	11 20 9.69	2.2609	5 33 3.0	10.968	11	13 4 18.23	2.0990	3 13 10.9	10.561
12	11 22 25.15	2.2564	5 22 3.2	11.004	12	13 6 24.11	2.0969	3 23 43.6	10.530
13	11 24 40.34	2.2509	5 11 2.5	11.019	13	13 8 29.86	2.0948	3 34 14.4	10.498
14	11 26 55.26	2.2465	5 0 0.9	11.033	14	13 10 35.49	2.0926	3 44 43.4	10.466
15	11 29 9.92	2.2421	4 48 58.5	11.046	15	13 12 41.00	2.0909	3 55 10.4	10.438
16	11 31 24.32	2.2378	4 37 55.4	11.067	16	13 14 46.40	2.0890	4 5 35.3	10.399
17	11 33 38.46	2.2335	4 26 51.7	11.067	17	13 16 51.68	2.0873	4 15 58.2	10.364
18	11 35 52.34	2.2292	4 15 47.4	11.078	18	13 18 56.86	2.0854	4 26 19.0	10.329
19	11 38 5.97	2.2250	4 4 42.6	11.083	19	13 21 1.93	2.0836	4 36 37.6	10.298
20	11 40 19.34	2.2209	3 53 37.4	11.089	20	13 23 6.89	2.0819	4 46 54.1	10.266
21	11 42 32.47	2.2168	3 42 31.8	11.095	21	13 25 11.75	2.0803	4 57 8.4	10.219
22	11 44 45.36	2.2128	3 31 26.0	11.099	22	13 27 16.52	2.0787	5 7 20.4	10.181
23	11 46 58.00	2.2088	N. 3° 30' 19.9	11.108	23	13 29 21.19	2.0771	S. 5° 17' 30.1	10.148
TUESDAY 14.					THURSDAY 16.				
0	11 49 10.41	2.2049	N. 3° 9' 13.7	11.105	0	13 31 25.77	2.0766	S. 5° 27' 37.5	10.108
1	11 51 22.58	2.2009	2 58 7.4	11.106	1	13 33 30.26	2.0741	5 37 42.5	10.063
2	11 53 34.52	2.1971	2 47 1.0	11.105	2	13 35 34.66	2.0727	5 47 45.1	10.022
3	11 55 46.23	2.1933	2 35 54.7	11.104	3	13 37 38.98	2.0713	5 57 45.2	9.981
4	11 57 57.72	2.1896	2 24 48.5	11.101	4	13 39 43.22	2.0700	6 7 42.8	9.939
5	12 0 8.98	2.1858	2 13 42.5	11.098	5	13 41 47.38	2.0688	6 17 37.9	9.897
6	12 2 20.02	2.1821	2 2 36.7	11.094	6	13 43 51.47	2.0675	6 27 30.5	9.854
7	12 4 30.84	2.1785	1 51 31.2	11.089	7	13 45 55.48	2.0663	6 37 20.4	9.810
8	12 6 41.44	2.1750	1 40 26.0	11.083	8	13 47 59.42	2.0652	6 47 7.7	9.766
9	12 8 51.83	2.1716	1 29 21.3	11.078	9	13 50 3.30	2.0641	6 56 52.3	9.721
10	12 11 2.02	2.1681	1 18 17.0	11.066	10	13 52 7.11	2.0630	7 6 34.2	9.676
11	12 13 12.01	2.1648	1 7 13.3	11.067	11	13 54 10.86	2.0619	7 16 13.3	9.629
12	12 15 21.79	2.1614	0 56 10.2	11.046	12	13 56 14.54	2.0609	7 25 49.7	9.582
13	12 17 31.37	2.1581	0 45 7.7	11.035	13	13 58 18.17	2.0600	7 35 23.2	9.536
14	12 19 40.76	2.1549	0 34 6.0	11.023	14	14 0 21.74	2.0591	7 44 53.9	9.487
15	12 21 49.95	2.1517	0 23 5.0	11.010	15	14 2 25.26	2.0583	7 54 21.7	9.439
16	12 23 58.96	2.1486	0 12 4.8	10.996	16	14 4 28.74	2.0576	8 3 46.6	9.390
17	12 26 7.78	2.1454	N. 0° 1' 5.5	10.980	17	14 6 32.17	2.0568	8 13 8.5	9.340
18	12 28 16.41	2.1424	S. 0° 9' 52.8	10.964	18	14 8 35.55	2.0561	8 22 27.5	9.292
19	12 30 24.87	2.1396	0 20 50.2	10.947	19	14 10 38.89	2.0553	8 31 43.4	9.239
20	12 32 33.15	2.1368	0 31 46.5	10.929	20	14 12 42.18	2.0546	8 40 56.2	9.188
21	12 34 41.26	2.1337	0 42 41.7	10.911	21	14 14 45.44	2.0540	8 50 5.9	9.136
22	12 36 49.19	2.1309	0 53 35.8	10.891	22	14 16 48.66	2.0534	8 59 12.5	9.084
23	12 38 56.96	2.1281	1 4 28.7	10.871	23	14 18 51.85	2.0529	9 8 15.9	9.031
24	12 41 4.56	2.1264	S. 1° 15' 20.3	10.849	24	14 20 55.01	2.0524	S. 9° 17' 16.2	8.978

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
FRIDAY 17.					SUNDAY 19.				
0	14 20 55.01	2.0624	S. 9 17 16.2	8.978	0	15 59 24.73	2.0609	S. 15 17 38.9	5.873
1	14 22 58.14	2.0619	9 26 13.3	8.924	1	16 1 28.36	2.0608	15 23 29.0	5.798
2	14 25 1.24	2.0615	9 35 7.1	8.869	2	16 3 32.02	2.0612	15 29 14.7	5.723
3	14 27 4.32	2.0611	9 43 57.6	8.814	3	16 5 35.72	2.0619	15 34 55.8	5.647
4	14 29 7.37	2.0607	9 52 44.8	8.769	4	16 7 39.45	2.0626	15 40 32.4	5.572
5	14 31 10.40	2.0603	10 1 28.7	8.708	5	16 9 43.22	2.0632	15 46 4.5	5.496
6	14 33 13.41	2.0600	10 10 9.2	8.646	6	16 11 47.03	2.0638	15 51 32.0	5.420
7	14 35 16.41	2.0496	10 18 46.3	8.589	7	16 13 50.88	2.0644	15 56 54.9	5.344
8	14 37 19.39	2.0496	10 27 19.9	8.632	8	16 15 54.76	2.0650	16 2 13.3	5.267
9	14 39 22.36	2.0494	10 35 50.1	8.474	9	16 17 58.68	2.0657	16 7 27.0	5.190
10	14 41 25.32	2.0492	10 44 16.8	8.416	10	16 20 2.64	2.0663	16 12 36.1	5.113
11	14 43 28.27	2.0491	10 52 40.0	8.357	11	16 22 6.63	2.0669	16 17 40.5	5.036
12	14 45 31.21	2.0490	11 0 59.6	8.297	12	16 24 10.66	2.0676	16 22 40.3	4.967
13	14 47 34.15	2.0489	11 9 15.7	8.238	13	16 26 14.73	2.0681	16 27 35.4	4.878
14	14 49 37.08	2.0489	11 17 28.1	8.178	14	16 28 18.83	2.0687	16 32 25.7	4.800
15	14 51 40.01	2.0488	11 25 36.9	8.117	15	16 30 22.98	2.0694	16 37 11.3	4.731
16	14 53 42.94	2.0488	11 33 42.1	8.056	16	16 32 27.16	2.0701	16 41 52.2	4.662
17	14 55 45.87	2.0488	11 41 43.6	7.994	17	16 34 31.38	2.0707	16 46 28.3	4.602
18	14 57 48.80	2.0489	11 49 41.3	7.932	18	16 36 35.64	2.0712	16 50 59.6	4.543
19	14 59 51.74	2.0490	11 57 35.3	7.869	19	16 38 39.93	2.0718	16 55 26.2	4.492
20	15 1 54.68	2.0492	12 5 25.6	7.806	20	16 40 44.26	2.0725	16 59 47.9	4.432
21	15 3 57.63	2.0493	12 13 12.1	7.743	21	16 42 48.63	2.0731	17 4 4.8	4.341
22	15 6 0.59	2.0495	12 20 54.7	7.679	22	16 44 53.03	2.0736	17 8 16.8	4.180
23	15 8 3.56	2.0497	S. 12 28 33.5	7.614	23	16 46 57.46	2.0743	S. 17 12 24.0	4.079
SATURDAY 18.					MONDAY 20.				
0	15 10 6.55	2.0499	S. 12 36 8.4	7.549	0	16 49 1.93	2.0748	S. 17 16 26.3	3.998
1	15 12 9.55	2.0501	12 43 39.4	7.484	1	16 51 6.43	2.0753	17 20 23.8	3.917
2	15 14 12.56	2.0504	12 51 6.5	7.418	2	16 53 10.97	2.0759	17 24 16.3	3.836
3	15 16 15.59	2.0506	12 58 29.6	7.352	3	16 55 15.54	2.0766	17 28 3.9	3.753
4	15 18 18.63	2.0509	13 5 48.7	7.286	4	16 57 20.15	2.0770	17 31 46.6	3.671
5	15 20 21.70	2.0513	13 13 3.9	7.219	5	16 59 24.78	2.0776	17 35 24.3	3.608
6	15 22 24.78	2.0516	13 20 15.0	7.152	6	17 1 29.45	2.0780	17 38 57.1	3.506
7	15 24 27.88	2.0519	13 27 22.0	7.084	7	17 3 34.15	2.0786	17 42 25.0	3.422
8	15 26 31.01	2.0523	13 34 25.0	7.016	8	17 5 38.88	2.0791	17 45 47.8	3.339
9	15 28 34.16	2.0527	13 41 23.9	6.947	9	17 7 43.64	2.0796	17 49 5.6	3.255
10	15 30 37.33	2.0531	13 48 18.6	6.878	10	17 9 48.43	2.0801	17 52 18.4	3.172
11	15 32 40.53	2.0535	13 55 9.2	6.808	11	17 11 53.25	2.0806	17 55 26.2	3.088
12	15 34 43.75	2.0539	14 1 55.6	6.738	12	17 13 58.10	2.0810	17 58 29.0	3.004
13	15 36 47.00	2.0543	14 8 37.8	6.668	13	17 16 2.97	2.0814	18 1 26.7	2.920
14	15 38 50.27	2.0548	14 15 15.8	6.598	14	17 18 7.87	2.0818	18 4 19.4	2.836
15	15 40 53.58	2.0553	14 21 49.6	6.527	15	17 20 12.79	2.0823	18 7 7.0	2.751
16	15 42 56.91	2.0558	14 28 19.1	6.456	16	17 22 17.74	2.0827	18 9 49.6	2.666
17	15 45 0.27	2.0563	14 34 44.3	6.384	17	17 24 22.71	2.0831	18 12 27.0	2.581
18	15 47 3.67	2.0569	14 41 5.2	6.312	18	17 26 27.71	2.0834	18 14 59.4	2.496
19	15 49 7.10	2.0574	14 47 21.8	6.240	19	17 28 32.73	2.0838	18 17 26.7	2.411
20	15 51 10.56	2.0580	14 53 34.0	6.167	20	17 30 37.76	2.0841	18 19 48.8	2.326
21	15 53 14.05	2.0585	14 59 41.9	6.094	21	17 32 42.82	2.0844	18 22 5.8	2.241
22	15 55 17.58	2.0591	15 5 45.3	6.021	22	17 34 47.89	2.0847	18 24 17.7	2.156
23	15 57 21.14	2.0596	15 11 44.3	5.947	23	17 36 52.98	2.0849	18 26 24.5	2.070
24	15 59 24.73	2.0602	S. 15 17 38.9	5.873	24	17 38 58.08	2.0853	S. 18 28 26.1	1.984

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
TUESDAY 21.					THURSDAY 23.				
0	17 38 58.08	2.0852	S. 18° 28' 26.1"	1.984	0	19 18 56.40	2.0713	S. 18° 24' 5.2"	2.150
1	17 41 3.20	2.0855	18 30 22.6	1.898	1	19 21 0.65	2.0704	18 21 53.7	2.224
2	17 43 8.34	2.0857	18 32 13.9	1.812	2	19 23 4.85	2.0695	18 19 37.2	2.317
3	17 45 13.49	2.0859	18 34 0.0	1.726	3	19 25 8.99	2.0686	18 17 15.7	2.400
4	17 47 18.64	2.0860	18 35 41.0	1.640	4	19 27 13.08	2.0676	18 14 49.2	2.484
5	17 49 23.80	2.0862	18 37 16.8	1.553	5	19 29 17.11	2.0667	18 12 17.7	2.567
6	17 51 28.98	2.0863	18 38 47.4	1.467	6	19 31 21.08	2.0658	18 9 41.2	2.649
7	17 53 34.17	2.0865	18 40 12.8	1.381	7	19 33 24.99	2.0648	18 6 59.8	2.731
8	17 55 39.36	2.0866	18 41 33.1	1.295	8	19 35 28.85	2.0637	18 4 13.5	2.813
9	17 57 44.56	2.0867	18 42 48.2	1.208	9	19 37 32.64	2.0627	18 1 22.3	2.895
10	17 59 49.76	2.0867	18 43 58.0	1.121	10	19 39 36.37	2.0617	17 58 26.1	2.977
11	18 1 54.96	2.0868	18 45 2.6	1.034	11	19 41 40.04	2.0606	17 55 25.0	3.058
12	18 4 0.17	2.0868	18 46 2.1	0.947	12	19 43 43.64	2.0596	17 52 19.1	3.139
13	18 6 5.38	2.0868	18 46 56.4	0.861	13	19 45 47.18	2.0584	17 49 8.3	3.220
14	18 8 10.58	2.0867	18 47 45.4	0.774	14	19 47 50.65	2.0572	17 45 52.7	3.301
15	18 10 15.78	2.0866	18 48 29.3	0.688	15	19 49 54.05	2.0561	17 42 32.2	3.382
16	18 12 20.97	2.0866	18 49 7.9	0.601	16	19 51 57.38	2.0550	17 39 6.9	3.462
17	18 14 26.16	2.0865	18 49 41.3	0.514	17	19 54 0.64	2.0538	17 35 36.8	3.541
18	18 16 31.35	2.0864	18 50 9.5	0.427	18	19 56 3.83	2.0526	17 32 2.0	3.621
19	18 18 36.53	2.0862	18 50 32.5	0.340	19	19 58 6.95	2.0513	17 28 22.4	3.700
20	18 20 41.69	2.0860	18 50 50.3	0.253	20	20 0 9.99	2.0501	17 24 38.0	3.779
21	18 22 46.84	2.0858	18 51 2.9	0.166	21	20 2 12.96	2.0489	17 20 48.9	3.857
22	18 24 51.98	2.0855	18 51 10.2	0.079	22	20 4 15.86	2.0476	17 16 55.2	3.936
23	18 26 57.11	2.0853	S. 18 51 12.3	0.007	23	20 6 18.68	2.0464	S. 17 12 56.8	4.013
WEDNESDAY 22.					FRIDAY 24.				
0	18 29 2.22	2.0850	S. 18 51 9.3	0.094	0	20 8 21.43	2.0451	S. 17 8 53.7	4.091
1	18 31 7.31	2.0847	18 51 1.0	0.181	1	20 10 24.10	2.0438	17 4 46.0	4.168
2	18 33 12.38	2.0844	18 50 47.5	0.268	2	20 12 26.69	2.0425	17 0 33.6	4.244
3	18 35 17.44	2.0841	18 50 28.8	0.354	3	20 14 29.20	2.0412	16 56 16.7	4.320
4	18 37 22.47	2.0837	18 50 5.0	0.441	4	20 16 31.63	2.0398	16 51 55.2	4.396
5	18 39 27.48	2.0833	18 49 36.0	0.528	5	20 18 33.98	2.0386	16 47 29.2	4.472
6	18 41 32.47	2.0828	18 49 1.7	0.615	6	20 20 36.25	2.0372	16 42 58.6	4.548
7	18 43 37.43	2.0824	18 48 22.2	0.701	7	20 22 38.44	2.0358	16 38 23.5	4.623
8	18 45 42.36	2.0819	18 47 37.6	0.787	8	20 24 40.54	2.0344	16 33 43.9	4.698
9	18 47 47.26	2.0815	18 46 47.8	0.873	9	20 26 42.56	2.0330	16 28 59.8	4.772
10	18 49 52.14	2.0810	18 45 52.9	0.959	10	20 28 44.50	2.0316	16 24 11.3	4.846
11	18 51 56.98	2.0804	18 44 52.8	1.045	11	20 30 46.36	2.0303	16 19 18.4	4.918
12	18 54 1.79	2.0798	18 43 47.5	1.131	12	20 32 48.13	2.0289	16 14 21.1	4.994
13	18 56 6.57	2.0792	18 42 37.1	1.217	13	20 34 49.82	2.0274	16 9 19.4	5.064
14	18 58 11.31	2.0786	18 41 21.5	1.302	14	20 36 51.42	2.0259	16 4 13.4	5.136
15	19 0 16.01	2.0780	18 40 0.8	1.387	15	20 38 52.93	2.0245	15 59 3.1	5.208
16	19 2 20.67	2.0774	18 38 35.0	1.473	16	20 40 54.36	2.0231	15 53 48.5	5.280
17	19 4 25.29	2.0767	18 37 4.1	1.558	17	20 42 55.70	2.0217	15 48 29.6	5.351
18	19 6 29.87	2.0760	18 35 28.0	1.643	18	20 44 56.96	2.0202	15 43 6.4	5.421
19	19 8 34.41	2.0753	18 33 46.9	1.728	19	20 46 58.13	2.0188	15 37 39.0	5.491
20	19 10 38.90	2.0745	18 32 0.7	1.813	20	20 48 59.22	2.0174	15 32 7.5	5.561
21	19 12 43.35	2.0738	18 30 9.4	1.897	21	20 51 0.22	2.0159	15 26 31.8	5.630
22	19 14 47.75	2.0729	18 28 13.1	1.982	22	20 53 1.13	2.0144	15 20 51.9	5.699
23	19 16 52.10	2.0721	18 26 11.7	2.066	23	20 55 1.95	2.0130	15 15 7.9	5.768
24	19 18 56.40	2.0713	S. 18 24 5.2	2.150	24	20 57 2.69	2.0115	S. 15 9 19.8	5.836

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SATURDAY 25.					MONDAY 27.				
0	h m s	"	S. 15° 9' 19.8"	5.596	0	h m s	"	S. 9° 20' 9.5"	8.516
1	20 57 2.69	2.0115	15 3 27.7	5.593	1	22 32 2.80	1.9921	9 11 37.2	8.529
2	20 59 3.34	2.0101	14 57 31.5	5.590	2	22 33 59.90	1.9913	9 3 2.4	8.541
3	21 1 3.90	2.0087	14 51 31.3	5.587	3	22 35 56.96	1.9906	8 54 25.1	8.543
4	21 3 4.37	2.0072	14 45 27.1	5.583	4	22 37 53.97	1.9496	8 45 45.3	8.544
5	21 5 4.76	2.0058	14 39 19.0	5.579	5	22 39 50.94	1.9491	8 37 3.1	8.548
6	21 7 5.06	2.0043	14 33 6.9	5.575	6	22 41 47.86	1.9484	8 28 18.4	8.548
7	21 9 5.27	2.0029	14 26 50.9	5.571	7	22 43 44.75	1.9478	8 19 31.3	8.548
8	21 11 5.40	2.0014	14 20 31.1	5.567	8	22 45 41.60	1.9472	8 10 41.9	8.548
9	21 13 5.44	1.9999	14 14 7.5	5.563	9	22 47 38.41	1.9466	8 1 50.1	8.548
10	21 15 5.39	1.9985	14 7 40.0	5.559	10	22 49 35.19	1.9460	7 52 56.1	8.548
11	21 17 5.26	1.9970	14 1 8.7	5.555	11	22 51 31.93	1.9455	7 43 59.8	8.548
12	21 19 5.04	1.9956	13 54 33.7	5.551	12	22 53 28.64	1.9450	7 35 1.3	8.548
13	21 21 4.74	1.9942	13 47 55.0	5.547	13	22 55 25.33	1.9445	7 26 0.6	8.548
14	21 23 4.35	1.9928	13 41 12.5	5.543	14	22 57 21.99	1.9441	7 16 57.8	8.548
15	21 25 3.88	1.9914	13 34 26.4	5.539	15	22 59 18.62	1.9437	7 7 52.9	8.548
16	21 27 3.32	1.9900	13 27 36.7	5.535	16	23 1 15.23	1.9433	6 58 45.9	8.548
17	21 29 2.68	1.9887	13 20 43.3	5.531	17	23 3 11.82	1.9429	6 49 36.9	8.548
18	21 31 1.96	1.9873	13 13 46.0	5.527	18	23 5 8.39	1.9427	6 40 25.8	8.548
19	21 33 1.15	1.9860	12 59 42.0	5.523	19	23 7 4.94	1.9424	6 31 12.8	8.548
20	21 35 0.27	1.9846	12 52 34.5	5.519	20	23 9 1.48	1.9423	6 21 57.8	8.548
21	21 36 59.30	1.9832	12 45 23.6	5.515	21	23 10 58.00	1.9421	6 12 40.9	8.548
22	21 38 58.25	1.9818	12 38 9.2	5.511	22	23 12 54.51	1.9419	6 3 22.2	8.548
23	21 40 57.12	1.9805		5.507	23	23 14 51.02	1.9418		8.548
24	21 42 55.91	1.9792		5.503	24	23 16 47.52	1.9417		8.548
SUNDAY 26.					TUESDAY 28.				
0	h m s	"	S. 12° 30' 51.5"	7.324	0	h m s	"	S. 5° 44' 39.2"	9.368
1	21 44 54.62	1.9779	12 23 30.4	7.320	1	23 18 44.02	1.9416	5 35 15.1	9.417
2	21 46 53.25	1.9766	12 16 5.9	7.435	2	23 20 40.51	1.9416	5 25 49.2	9.445
3	21 48 51.81	1.9754	12 8 38.2	7.489	3	23 22 37.01	1.9417	5 16 21.6	9.473
4	21 50 50.29	1.9741	12 1 7.2	7.543	4	23 24 33.51	1.9418	5 6 52.4	9.500
5	21 52 48.70	1.9729	11 53 32.9	7.597	5	23 26 30.02	1.9419	4 57 21.6	9.527
6	21 54 47.03	1.9716	11 45 55.5	7.650	6	23 28 26.54	1.9420	4 47 49.1	9.553
7	21 56 45.29	1.9704	11 38 14.9	7.703	7	23 30 23.06	1.9422	4 38 15.1	9.579
8	21 58 43.48	1.9692	11 30 31.1	7.756	8	23 32 19.59	1.9424	4 28 39.6	9.604
9	22 0 41.60	1.9681	11 22 44.2	7.807	9	23 34 16.14	1.9426	4 19 2.6	9.629
10	22 2 39.65	1.9669	11 14 54.2	7.858	10	23 36 12.71	1.9429	4 9 24.2	9.653
11	22 4 37.63	1.9658	11 7 1.2	7.908	11	23 38 9.29	1.9432	3 59 44.4	9.675
12	22 6 35.54	1.9646	10 59 5.2	7.958	12	23 40 5.90	1.9435	3 50 3.2	9.698
13	22 8 33.38	1.9635	10 51 6.2	8.008	13	23 42 2.53	1.9441	3 40 20.6	9.720
14	22 10 31.16	1.9625	10 43 4.2	8.057	14	23 43 59.19	1.9446	3 30 36.8	9.741
15	22 12 28.88	1.9615	10 34 59.3	8.106	15	23 45 55.88	1.9451	3 20 51.7	9.762
16	22 14 26.53	1.9604	10 26 51.5	8.155	16	23 47 52.60	1.9457	3 11 5.4	9.783
17	22 16 24.12	1.9594	10 18 40.9	8.200	17	23 49 49.36	1.9463	3 1 17.9	9.801
18	22 18 21.65	1.9583	10 10 27.5	8.247	18	23 51 46.15	1.9469	2 51 29.2	9.819
19	22 20 19.12	1.9574	10 2 11.3	8.293	19	23 53 42.99	1.9476	2 41 39.4	9.838
20	22 22 16.53	1.9564	9 53 52.3	8.339	20	23 55 39.87	1.9483	2 31 48.6	9.856
21	22 24 13.89	1.9555	9 45 30.6	8.384	21	23 57 36.79	1.9491	2 21 56.7	9.874
22	22 26 11.20	1.9546	9 37 6.2	8.429	22	23 59 33.76	1.9499	2 12 3.8	9.890
23	22 28 8.45	1.9538	9 28 39.2	8.473	23	0 1 30.78	1.9506	2 2 10.0	9.905
24	22 30 5.65	1.9529	S. 9° 20' 9.5"	8.516	24	0 3 27.85	1.9517		9.920
	22 32 2.80	1.9521				0 5 24.98	1.9527		

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
WEDNESDAY 29.					FRIDAY 31.				
0	h m s	°	°	"	0	h m s	°	°	"
1	0 5 24.98	1.9377	S. 1° 52' 15.2	9.920	1	1 41 10.10	2.0564	N. 6° 8' 45.5	9.848
2	0 7 22.17	1.9337	1 42 19.5	9.935	2	1 43 13.58	2.0598	6 18 35.9	9.829
3	0 9 19.42	1.9347	1 32 23.0	9.949	3	1 45 17.27	2.0633	6 28 25.0	9.806
4	0 11 16.73	1.9358	1 22 25.7	9.963	4	1 47 21.17	2.0668	6 38 12.9	9.787
5	0 13 14.11	1.9370	1 12 27.5	9.976	5	1 49 25.28	2.0704	6 47 59.4	9.764
6	0 15 11.56	1.9383	1 2 28.6	9.987	6	1 51 29.61	2.0740	6 57 44.6	9.741
7	0 17 9.09	1.9394	0 52 29.1	9.996	7	1 53 34.16	2.0776	7 7 28.3	9.717
8	0 19 6.69	1.9397	0 42 28.9	10.009	8	1 55 38.93	2.0813	7 17 10.6	9.692
9	0 21 4.37	1.9390	0 32 28.0	10.019	9	1 57 43.92	2.0851	7 26 51.4	9.666
10	0 23 2.13	1.9384	0 22 26.6	10.029	10	1 59 49.14	2.0889	7 36 30.7	9.640
11	0 24 59.98	1.9348	0 12 24.6	10.038	11	2 1 54.59	2.0928	7 46 8.3	9.613
12	0 26 57.91	1.9363	S. 0 2 22.1	10.046	12	2 4 0.27	2.0967	7 55 44.2	9.584
13	0 28 55.93	1.9378	N. 0 7 40.9	10.053	13	2 6 6.19	2.1007	8 5 18.4	9.555
14	0 30 54.04	1.9394	0 17 44.3	10.060	14	2 8 12.35	2.1047	8 14 50.8	9.525
15	0 32 52.25	1.9710	0 27 48.0	10.066	15	2 10 18.75	2.1087	8 24 21.4	9.493
16	0 34 50.56	1.9737	0 37 52.1	10.070	16	2 12 25.39	2.1128	8 33 50.1	9.461
17	0 36 48.97	1.9744	0 47 56.5	10.076	17	2 14 32.28	2.1170	8 43 16.8	9.428
18	0 38 47.49	1.9763	0 58 1.1	10.079	18	2 16 39.42	2.1213	8 52 41.5	9.395
19	0 40 46.11	1.9780	1 8 6.0	10.083	19	2 18 46.82	2.1254	9 2 4.2	9.360
20	0 42 44.85	1.9799	1 18 11.1	10.086	20	2 20 54.47	2.1297	9 11 24.8	9.325
21	0 44 43.70	1.9818	1 28 16.3	10.088	21	2 23 2.38	2.1340	9 20 43.2	9.288
22	0 46 42.67	1.9837	1 38 21.6	10.089	22	2 25 10.55	2.1384	9 29 59.4	9.251
23	0 48 41.75	1.9857	1 48 27.0	10.090	23	2 27 18.99	2.1428	9 39 13.3	9.212
24	0 50 40.96	1.9878	N. 1 58 32.4	10.090		2 29 27.69	2.1473	N. 9 48 24.9	9.173
THURSDAY 30.					SATURDAY, FEBRUARY 1.				
0	0 52 40.29	1.9906	N. 2 8 37.8	10.089	0	2 31 36.67	2.1518	N. 9 57 34.1	9.132
1	0 54 39.75	1.9922	2 18 43.1	10.088					
2	0 56 39.35	1.9944	2 28 48.3	10.088					
3	0 58 39.08	1.9967	2 38 53.3	10.082					
4	1 0 38.95	1.9990	2 48 58.1	10.076					
5	1 2 38.96	2.0014	2 59 2.7	10.074					
6	1 4 39.12	2.0038	3 9 7.0	10.069					
7	1 6 39.42	2.0063	3 19 11.0	10.063					
8	1 8 39.87	2.0088	3 29 14.6	10.057					
9	1 10 40.48	2.0114	3 39 17.8	10.050					
10	1 12 41.24	2.0140	3 49 20.6	10.043					
11	1 14 42.16	2.0167	3 59 22.9	10.034					
12	1 16 43.24	2.0195	4 9 24.6	10.024					
13	1 18 44.49	2.0223	4 19 25.7	10.014					
14	1 20 45.91	2.0251	4 29 26.2	10.002					
15	1 22 47.50	2.0280	4 39 26.0	9.990					
16	1 24 49.27	2.0310	4 49 25.0	9.977					
17	1 26 51.22	2.0340	4 59 23.3	9.964					
18	1 28 53.35	2.0370	5 9 20.7	9.950					
19	1 30 55.66	2.0401	5 19 17.3	9.936					
20	1 32 58.16	2.0433	5 29 13.0	9.920					
21	1 35 0.85	2.0465	5 39 7.7	9.904					
22	1 37 3.74	2.0497	5 49 1.4	9.886					
23	1 39 6.82	2.0530	5 58 54.0	9.868					
24	1 41 10.10	2.0564	N. 6 8 45.5	9.848					

PHASES OF THE MOON.

☾ First Quarter, . .	d h m	2 16 2.5
☾ Full Moon, . . .	9 10 52.8	
☾ Last Quarter, . .	16 5 3.7	
● New Moon, . . .	24 7 18.4	

☾ Perigee,	d h	9 14.4
☾ Apogee,	23 7.6	

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Dist.	III ^h .	P. L. of Dist.	VI ^h .	P. L. of Dist.	IX ^h .	P. L. of Dist.
1	SUN W.	70° 52' 0"	3294	72° 16' 18"	3293	73° 40' 50"	3270	75° 5' 37"	3266
	α Aquilæ W.	57 47 28	3293	59 6 22	3249	60 25 52	3217	61 45 57	3498
	Venus W.	46 50 57	3304	48 13 20	3380	49 35 59	3366	50 58 54	3352
	Aldebaran E.	76 36 23	2906	75 4 10	2904	73 31 43	2982	71 59 1	2909
	Pollux E.	120 3 44	2997	118 33 28	2964	117 2 55	2960	115 32 4	2946
2	SUN W.	82 13 41	3183	83 40 11	3187	85 7 0	3151	86 34 8	3134
	α Aquilæ W.	68 34 28	3350	69 57 42	3324	71 21 26	3300	72 45 38	3276
	Venus W.	57 57 48	3274	59 22 30	3266	60 47 31	3240	62 12 53	3223
	Fomalhaut W.	36 5 34	3820	37 20 16	3734	38 36 27	3656	39 54 1	3564
	Jupiter W.	28 36 59	2873	30 9 53	2866	31 43 5	2842	33 16 38	2827
	Aldebaran E.	64 11 26	2803	62 37 2	2789	61 2 20	2774	59 27 18	2760
	Pollux E.	107 53 14	2880	106 20 30	2865	104 47 26	2849	103 14 2	2833
3	SUN W.	93 54 58	3047	95 24 13	3028	96 53 51	3006	98 23 52	2991
	α Aquilæ W.	79 53 30	3163	81 20 23	3142	82 47 42	3121	84 15 26	3101
	Venus W.	69 24 56	3132	70 52 27	3112	72 20 22	3093	73 48 40	3073
	Fomalhaut W.	46 39 49	3294	48 4 7	3247	49 29 21	3202	50 55 28	3169
	Jupiter W.	41 9 31	2746	42 45 11	2728	44 21 14	2710	45 57 40	2692
	Aldebaran E.	51 27 3	2676	49 49 54	2662	48 12 23	2645	46 34 29	2627
	Pollux E.	95 21 43	2780	93 46 10	2732	92 10 13	2716	90 33 53	2696
4	SUN W.	105 59 59	2893	107 32 27	2873	109 5 21	2852	110 38 41	2832
	α Aquilæ W.	91 40 4	3007	93 10 8	2990	94 40 33	2973	96 11 18	2956
	Venus W.	81 16 18	2972	82 47 6	2951	84 18 20	2930	85 50 1	2909
	Fomalhaut W.	58 18 15	2972	59 49 3	2939	61 20 34	2906	62 52 45	2875
	Jupiter W.	54 5 55	2601	55 44 49	2582	57 24 10	2562	59 3 56	2543
	α Pegasi W.	44 2 32	3166	45 29 23	3111	46 57 19	3061	48 26 16	3014
	Aldebaran E.	38 18 55	2537	36 38 33	2518	34 57 45	2499	33 16 31	2480
	Pollux E.	82 26 19	2609	80 47 36	2591	79 8 28	2572	77 28 55	2555
	Regulus E.	118 26 15	2536	116 45 54	2519	115 5 8	2500	113 23 55	2481
5	SUN W.	118 31 57	2730	120 7 57	2710	121 44 23	2690	123 21 16	2670
	α Aquilæ W.	103 49 46	2891	105 22 17	2881	106 55 0	2871	108 27 56	2863
	Venus W.	93 35 7	2804	95 9 30	2789	96 44 21	2762	98 19 39	2741
	Fomalhaut W.	70 43 16	2734	72 19 11	2708	73 55 40	2683	75 32 43	2659
	Jupiter W.	67 29 29	2447	69 11 57	2428	70 54 53	2408	72 38 15	2389
	α Pegasi W.	56 4 56	2811	57 39 10	2776	59 14 11	2742	60 49 55	2710
	Pollux E.	69 5 2	2467	67 23 3	2450	65 40 39	2433	63 57 52	2417
	Regulus E.	104 51 9	2386	103 7 14	2367	101 22 52	2348	99 38 3	2329
6	Venus W.	106 22 57	2640	108 0 57	2621	109 39 23	2602	111 18 15	2584
	Fomalhaut W.	83 45 44	2551	85 25 47	2531	87 6 17	2512	88 47 13	2495
	Jupiter W.	81 21 56	2297	83 8 0	2279	84 54 31	2262	86 41 27	2244
	α Pegasi W.	68 58 47	2568	70 38 26	2543	72 18 39	2520	73 59 25	2497
	α Arietis W.	26 6 20	3017	27 36 12	2911	29 8 17	2819	30 42 20	2740
	Pollux E.	55 18 20	2344	53 33 24	2331	51 48 10	2320	50 2 39	2309
	Regulus E.	90 47 7	2237	88 59 35	2220	87 11 37	2202	85 23 13	2186
7	Fomalhaut W.	97 17 31	2423	99 0 33	2413	100 43 50	2402	102 27 22	2394
	Jupiter W.	95 42 22	2166	97 31 43	2150	99 21 26	2136	101 11 31	2123
	α Pegasi W.	82 30 42	2399	84 14 18	2383	85 58 17	2368	87 42 37	2354
	α Arietis W.	38 55 18	2460	40 37 27	2419	42 20 34	2384	44 4 32	2350
	Pollux E.	41 11 48	2277	39 25 15	2277	37 38 42	2279	35 52 12	2265
	Regulus E.	76 15 1	2107	74 24 12	2092	72 33 1	2076	70 41 28	2066

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Dist.	XVh.	P. L. of Dist.	XVIIIh.	P. L. of Dist.	XXIh.	P. L. of Dist.
1	SUN W.	76° 30' 40"	3242	77° 56' 0"	3228	79° 21' 36"	3213	80° 47' 30"	3198
	α Aquilæ W.	63 6 35	3456	64 27 46	3430	65 49 29	3402	67 11 43	3376
	Venus W.	52 22 5	3337	53 45 34	3322	55 9 20	3306	56 33 25	3290
	Aldebaran E.	70 26 3	2857	68 52 49	2845	67 19 19	2831	65 45 31	2818
	Pollux E.	114 0 56	2941	112 29 29	2926	110 57 43	2911	109 25 38	2896
2	SUN W.	88 1 36	3117	89 29 25	3101	90 57 34	3092	92 26 5	3086
	α Aquilæ W.	74 10 18	3263	75 35 25	3229	77 1 0	3206	78 27 2	3184
	Venus W.	63 38 35	3205	65 4 38	3186	66 31 2	3169	67 57 48	3151
	Fomalhaut W.	41 12 53	3317	42 32 58	3466	43 54 11	3399	45 16 29	3345
	Jupiter W.	34 50 30	2911	36 24 43	2796	37 59 18	2779	39 34 13	2762
	Aldebaran E.	57 51 57	2744	56 16 15	2728	54 40 12	2712	53 3 48	2696
	Pollux E.	101 40 17	2817	100 6 11	2801	98 31 44	2784	96 56 55	2767
3	SUN W.	99 54 16	2971	101 25 5	2962	102 56 18	2932	104 27 56	2912
	α Aquilæ W.	85 43 34	3081	87 12 7	3062	88 41 3	3043	90 10 22	3026
	Venus W.	75 17 22	3054	76 46 28	3033	78 16 0	3013	79 45 56	2993
	Fomalhaut W.	52 22 26	3118	53 50 14	3079	55 18 49	3042	56 48 10	3006
	Jupiter W.	47 34 30	2675	49 11 44	2666	50 49 22	2638	52 27 26	2619
	Aldebaran E.	44 56 11	2610	43 17 29	2592	41 38 23	2574	39 58 52	2555
	Pollux E.	88 57 10	2680	87 20 3	2663	85 42 33	2644	84 4 38	2626
4	SUN W.	112 12 27	2811	113 46 40	2792	115 21 19	2771	116 56 25	2751
	α Aquilæ W.	97 42 24	2942	99 13 49	2929	100 45 31	2916	102 17 31	2902
	Venus W.	87 22 8	2988	88 54 42	2967	90 27 43	2945	92 1 12	2925
	Fomalhaut W.	64 25 36	2845	65 59 5	2816	67 33 12	2788	69 7 56	2760
	Jupiter W.	60 44 9	2624	62 24 49	2604	64 5 55	2485	65 47 29	2466
	α Pegasi W.	49 56 13	2969	51 27 5	2926	52 58 51	2886	54 31 29	2847
	Aldebaran E.	31 34 50	2462	29 52 43	2443	28 10 9	2423	26 27 7	2405
	Pollux E.	75 48 58	2537	74 8 36	2519	72 27 49	2502	70 46 38	2484
	Regulus E.	111 42 15	2463	110 0 9	2443	108 17 36	2424	106 34 36	2405
5	SUN W.	124 58 36	2651	126 36 22	2632	128 14 34	2612	129 53 13	2593
	α Aquilæ W.	110 1 2	2857	111 34 16	2832	113 7 36	2848	114 41 1	2847
	Venus W.	99 55 24	2720	101 31 37	2700	103 8 17	2680	104 45 23	2660
	Fomalhaut W.	77 10 17	2635	78 48 24	2613	80 27 1	2591	82 6 8	2570
	Jupiter W.	74 22 5	2371	76 6 22	2362	77 51 6	2333	79 36 18	2315
	α Pegasi W.	62 26 22	2679	64 3 30	2649	65 41 18	2621	67 19 44	2594
	Pollux E.	62 14 41	2401	60 31 8	2386	58 47 13	2371	57 2 57	2357
	Regulus E.	97 52 46	2311	96 7 2	2292	94 20 50	2274	92 34 12	2256
6	Venus W.	112 57 33	2666	114 37 15	2648	116 17 21	2630	117 57 52	2615
	Fomalhaut W.	90 28 33	2479	92 10 16	2463	93 52 21	2448	95 34 46	2438
	Jupiter W.	88 28 49	2227	90 16 36	2210	92 4 48	2195	93 53 23	2179
	α Pegasi W.	75 40 43	2475	77 22 31	2455	79 4 47	2435	80 47 32	2417
	α Arctis W.	32 18 7	2660	33 55 28	2609	35 34 11	2583	37 14 11	2564
	Pollux E.	48 16 52	2300	46 30 52	2281	44 44 39	2265	42 58 17	2250
	Regulus E.	83 34 24	2169	81 45 9	2153	79 55 30	2137	78 5 27	2122
7	Fomalhaut W.	104 11 7	2386	105 55 1	2360	107 39 4	2376	109 23 13	2373
	Jupiter W.	103 1 55	2110	104 52 40	2096	106 43 42	2086	108 35 3	2075
	α Pegasi W.	89 27 18	2342	91 12 17	2330	92 57 33	2320	94 43 4	2311
	α Arctis W.	45 49 18	2320	47 34 48	2292	49 20 59	2268	51 7 46	2344
	Pollux E.	34 5 50	2225	32 19 43	2209	30 33 57	2229	28 48 40	2267
	Regulus E.	68 49 36	2052	66 57 23	2041	65 4 53	2029	63 12 4	2019

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Dist.	IIIh.	P. L. of Dist.	VIh.	P. L. of Dist.	IXh.	P. L. of Dist.
8	Jupiter W.	110° 26' 40"	2066	112° 18' 33"	2066	114° 10' 40"	2047	116° 3' 1"	2060
	α Pegasi W.	96 28 48	2202	98 14 44	2202	100 0 49	2291	101 47 2	2286
	α Arietis W.	52 55 8	2232	54 43 1	2204	56 31 22	2187	58 20 10	2171
	Aldebaran W.	18 49 30	2000	20 42 51	1998	22 36 28	1990	24 30 18	1982
	Regulus E.	61 18 59	2000	59 25 38	1999	57 32 2	1991	55 38 14	1983
	Spica E.	114 51 42	2034	112 59 0	2023	111 6 2	2014	109 12 50	2006
9	α Arietis W.	67 29 18	2116	69 19 54	2107	71 10 42	2102	73 1 38	2096
	Aldebaran W.	34 2 11	1954	35 56 58	1961	37 51 49	1949	39 46 44	1947
	Regulus E.	46 6 30	1936	44 11 46	1933	42 16 57	1961	40 22 5	1930
	Spica E.	99 43 57	1977	97 49 46	1973	95 55 29	1970	94 1 8	1969
10	α Arietis W.	82 17 24	2003	84 8 34	2006	85 59 40	2009	87 50 40	2106
	Aldebaran W.	49 21 28	1953	51 16 17	1955	53 11 1	1961	55 5 37	1965
	Regulus E.	30 47 42	1986	28 52 58	1990	26 58 21	1968	25 3 52	1970
	Spica E.	84 29 17	1976	82 35 3	1979	80 40 55	1983	78 46 54	1989
	Saturn E.	125 5 49	1999	123 11 58	1992	121 18 11	1996	119 24 31	2001
11	α Arietis W.	97 3 17	2145	98 53 8	2155	100 42 43	2168	102 31 59	2181
	Aldebaran W.	64 36 14	2003	66 29 44	2012	68 22 59	2022	70 15 57	2033
	Spica E.	69 19 23	2038	67 26 33	2030	65 33 59	2050	63 41 42	2062
	Saturn E.	109 58 28	2037	108 5 52	2046	106 13 30	2057	104 21 24	2068
	Antares E.	115 0 32	2078	113 8 59	2086	111 17 37	2094	109 26 29	2103
12	Aldebaran W.	79 36 16	2088	81 27 19	2112	83 18 0	2128	85 8 17	2148
	Pollux W.	36 51 12	2200	38 37 26	2200	40 23 40	2202	42 9 51	2206
	Spica E.	54 25 16	2132	52 35 5	2148	50 45 19	2168	48 55 59	2182
	Saturn E.	95 5 28	2132	93 15 17	2146	91 25 28	2161	89 36 1	2177
	Antares E.	100 14 47	2163	98 25 23	2176	96 36 19	2190	94 47 37	2206
13	Aldebaran W.	94 13 45	2226	96 1 35	2248	97 48 59	2260	99 35 57	2279
	Pollux W.	50 58 29	2240	52 43 30	2252	54 28 14	2264	56 12 40	2279
	Regulus W.	14 8 33	2230	15 56 3	2253	17 43 12	2269	19 29 57	2286
	Spica E.	39 56 14	2261	38 9 47	2263	36 23 52	2276	34 38 31	2261
	Saturn E.	80 34 50	2260	78 47 51	2278	77 1 19	2295	75 15 12	2313
	Antares E.	85 50 0	2288	84 3 43	2297	82 17 53	2324	80 32 29	2344
	SUN E.	130 30 2	2559	128 50 11	2577	127 10 44	2596	125 31 43	2616
14	Aldebaran W.	108 24 7	2271	110 8 24	2280	111 52 15	2408	113 35 39	2426
	Pollux W.	64 49 34	2466	66 31 51	2472	68 13 44	2488	69 55 14	2505
	Regulus W.	28 17 26	2274	30 1 38	2292	31 45 24	2410	33 28 44	2429
	Saturn E.	66 31 21	2407	64 47 55	2426	63 4 57	2445	61 22 26	2463
	Antares E.	71 52 24	2441	70 9 47	2461	68 27 39	2481	66 45 59	2502
	SUN E.	117 23 4	2711	115 46 39	2731	114 10 40	2750	112 35 7	2770
15	Pollux W.	78 16 46	2201	79 55 53	2209	81 34 36	2238	83 12 55	2242
	Regulus W.	41 58 53	2290	43 39 38	2299	45 19 57	2346	46 59 53	2374
	Saturn E.	52 56 29	2269	51 16 37	2277	49 37 11	2296	47 58 10	2314
	Antares E.	58 24 55	2207	56 46 10	2229	55 7 55	2250	53 30 8	2272
	SUN E.	104 43 51	2590	103 10 52	2598	101 38 18	2608	100 6 9	2527
16	Pollux W.	91 18 45	2729	92 54 47	2745	94 30 27	2761	96 5 46	2778
	Regulus W.	55 13 30	2699	56 51 5	2676	58 28 17	2692	60 5 8	2706
	Saturn E.	39 49 19	2705	38 12 46	2723	36 36 36	2741	35 0 50	2756
	Antares E.	45 28 47	2787	43 54 2	2811	42 19 49	2837	40 46 9	2862

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Dist.	XVh.	P. L. of Dist.	XVIIIh.	P. L. of Dist.	XXIh.	P. L. of Dist.
8	Jupiter W.	117° 55' 34"	2092	119° 48' 18"	2092	121° 41' 11"	2092	123° 34' 14"	2014
	α Pegasi W.	103 33 19	2285	105 19 40	2285	107 6 2	2285	108 52 22	2289
	α Arietis W.	60 9 21	2187	61 58 54	2144	63 48 46	2184	65 38 54	2128
	Aldebaran W.	26 24 21	1975	28 18 34	1966	30 12 58	1963	32 7 31	1958
	Regulus E.	53 44 12	1976	51 50 0	1970	49 55 38	1964	48 1 8	1960
	Spica E.	107 19 25	1968	105 25 47	1961	103 31 59	1966	101 38 2	1981
9	α Arietis W.	74 52 41	2004	76 43 49	2002	78 35 0	2002	80 26 12	2002
	Aldebaran W.	41 41 42	1947	43 36 40	1947	45 31 38	1848	47 26 35	1960
	Regulus E.	38 27 11	1949	36 32 16	1950	34 37 22	1951	32 42 30	1953
	Spica E.	92 6 45	1969	90 12 21	1968	88 17 58	1970	86 23 36	1973
10	α Arietis W.	89 41 32	2110	91 32 16	2117	93 22 49	2126	95 13 10	2134
	Aldebaran W.	57 0 6	1972	58 54 25	1979	60 48 33	1980	62 42 30	1994
	Regulus E.	23 9 31	1978	21 15 22	1986	19 21 25	1995	17 27 42	2005
	Spica E.	76 53 1	1998	74 59 19	2002	73 5 47	2010	71 12 28	2019
	Saturn E.	117 30 58	2007	115 37 34	2013	113 44 20	2021	111 51 18	2028
11	α Arietis W.	104 20 55	2198	106 9 30	2210	107 57 43	2227	109 45 31	2243
	Aldebaran W.	72 8 39	2045	74 1 3	2048	75 53 7	2070	77 44 52	2084
	Spica E.	61 49 44	2074	59 58 5	2087	58 6 46	2102	56 15 50	2117
	Saturn E.	102 29 35	2080	100 38 5	2092	98 46 52	2105	96 56 0	2118
	Antares E.	107 35 35	2114	105 44 57	2124	103 54 35	2137	102 4 32	2149
12	Aldebaran W.	86 58 12	2159	88 47 42	2174	90 36 48	2191	92 25 29	2208
	Pollux W.	43 55 57	2202	45 41 54	2210	47 27 39	2218	49 13 12	2229
	Spica E.	47 7 5	2201	45 18 39	2220	43 30 41	2240	41 43 12	2260
	Saturn E.	87 46 58	2192	85 58 19	2208	84 10 4	2225	82 22 14	2243
	Antares E.	92 59 18	2221	91 11 22	2237	89 23 49	2254	87 36 42	2271
13	Aldebaran W.	101 22 28	2296	103 8 33	2315	104 54 11	2333	106 39 22	2352
	Pollux W.	57 56 45	2293	59 40 30	2408	61 23 53	2428	63 6 55	2439
	Regulus W.	21 16 17	2202	23 2 13	2320	24 47 43	2357	26 32 48	2366
	Spica E.	32 53 46	2376	31 9 37	2408	29 26 6	2432	27 43 17	2462
	Saturn E.	73 29 32	2352	71 44 19	2360	69 59 32	2369	68 15 13	2388
	Antares E.	78 47 33	2362	77 3 4	2382	75 19 3	2401	73 35 29	2421
	SUN E.	123 53 8	2632	122 14 58	2652	120 37 14	2672	118 59 56	2691
14	Aldebaran W.	115 18 37	2445	117 1 8	2463	118 43 13	2489	120 24 51	2499
	Pollux W.	71 36 20	2522	73 17 2	2539	74 57 21	2567	76 37 15	2574
	Regulus W.	35 11 38	2445	36 54 5	2465	38 36 7	2484	40 17 42	2502
	Saturn E.	59 40 21	2482	57 58 43	2502	56 17 32	2521	54 36 48	2539
	Antares E.	65 4 48	2522	63 24 6	2543	61 43 53	2565	60 4 10	2585
	SUN E.	111 0 0	2790	109 25 19	2810	107 51 4	2830	106 17 15	2849
15	Pollux W.	84 50 51	2660	86 28 24	2678	88 5 34	2695	89 42 21	2712
	Regulus W.	48 39 23	2591	50 18 30	2609	51 57 13	2628	53 35 33	2643
	Saturn E.	46 19 34	2632	44 41 23	2652	43 3 38	2669	41 26 16	2687
	Antares E.	51 52 52	2695	50 16 5	2718	48 39 49	2740	47 4 2	2764
	SUN E.	98 34 24	2945	97 3 3	2964	95 32 5	2983	94 1 31	3001
16	Pollux W.	97 40 43	2794	99 15 19	2810	100 49 34	2825	102 23 29	2841
	Regulus W.	61 41 38	2728	63 17 48	2738	64 53 37	2753	66 29 7	2768
	Saturn E.	33 25 27	2776	31 50 27	2793	30 15 50	2811	28 41 36	2828
	Antares E.	39 13 1	2889	37 40 28	2916	36 8 30	2946	34 37 9	2976

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Dist.	IIIh.	P. L. of Dist.	VIh.	P. L. of Dist.	IXh.	P. L. of Dist.
16	SUN	E.	92° 31' 19"	3019	91° 1' 30"	3036	89° 32' 2"	3054	88° 2' 57"	3071
17	Pollux	W.	103 57 4	2855	105 30 20	2871	107 3 16	2888	108 35 53	2901
	Regulus	W.	68 4 17	2782	69 39 9	2796	71 13 43	2809	72 47 59	2822
	Saturn	E.	27 7 45	2847	25 34 18	2864	24 1 13	2884	22 28 33	2904
	SUN	E.	80 42 32	3162	79 15 25	3167	77 48 36	3183	76 22 5	3196
18	Regulus	W.	80 35 13	2863	82 7 54	2894	83 40 21	2904	85 12 35	2915
	Spica	W.	27 28 18	2983	28 58 52	2985	30 29 24	2987	31 59 53	2990
	SUN	E.	69 13 34	3262	67 48 38	3274	66 23 56	3286	64 59 28	3297
19	Regulus	W.	92 50 36	2861	94 21 38	2869	95 52 30	2877	97 23 12	2884
	Spica	W.	39 31 4	3014	41 1 0	3018	42 30 51	3023	44 0 35	3028
	SUN	E.	58 0 13	3348	56 36 57	3356	55 13 50	3365	53 50 54	3373
20	Regulus	W.	104 54 32	3016	106 24 25	3022	107 54 11	3027	109 23 50	3032
	Spica	W.	51 27 46	3051	52 56 56	3055	54 26 1	3059	55 55 1	3063
	SUN	E.	46 58 28	3410	45 36 23	3416	44 14 25	3423	42 52 34	3429
21	Spica	W.	63 18 55	3078	64 47 31	3081	66 16 4	3083	67 44 34	3086
	SUN	E.	36 4 52	3454	34 43 37	3458	33 22 26	3463	32 1 20	3467
26	SUN	W.	18 24 21	3465	19 45 35	3446	21 7 0	3438	22 28 34	3429
	α Arietis	E.	71 40 20	3185	70 13 53	3183	68 47 24	3183	67 20 55	3182
	Aldebaran	E.	103 43 23	3025	102 13 43	3023	100 43 58	3019	99 14 9	3014
27	SUN	W.	29 18 43	3390	30 41 11	3363	32 3 47	3375	33 26 32	3367
	α Arietis	E.	60 8 20	3183	58 41 50	3183	57 15 21	3184	55 48 53	3186
	Aldebaran	E.	91 43 35	2990	90 13 10	2984	88 42 37	2979	87 11 58	2973
28	SUN	W.	40 22 30	3328	41 46 9	3319	43 9 58	3310	44 33 58	3302
	α Arietis	E.	48 37 19	3204	47 11 15	3210	45 45 18	3217	44 19 29	3227
	Aldebaran	E.	79 36 47	2941	78 5 20	2934	76 33 44	2926	75 1 58	2918
29	SUN	W.	51 36 35	3253	53 1 41	3243	54 26 59	3232	55 52 29	3221
	Fomalhaut	W.	33 33 33	4056	34 44 17	3956	35 56 38	3869	37 10 29	3789
	Venus	W.	21 21 47	3337	22 45 16	3326	24 8 59	3312	25 32 55	3302
	α Arietis	E.	37 13 47	3301	35 49 37	3325	34 25 54	3353	33 2 44	3366
	Aldebaran	E.	67 20 36	2876	65 47 46	2867	64 14 45	2857	62 41 31	2848
	Pollux	E.	111 1 2	2966	109 29 54	2946	107 58 33	2935	106 26 58	2924
30	SUN	W.	63 3 24	3163	64 30 18	3160	65 57 28	3157	67 24 53	3154
	Fomalhaut	W.	43 38 28	3480	44 59 15	3431	46 20 55	3396	47 43 27	3345
	Venus	W.	32 36 1	3241	34 1 22	3228	35 26 58	3214	36 52 50	3201
	α Pegasi	W.	30 50 27	4154	31 59 37	4025	33 10 52	3913	34 23 59	3810
	Aldebaran	E.	54 52 6	2795	53 17 31	2782	51 42 40	2772	50 7 35	2760
	Pollux	E.	98 45 30	2866	97 12 28	2844	95 39 10	2842	94 5 37	2830
31	SUN	W.	74 46 6	3063	76 15 13	3038	77 44 39	3022	79 14 23	3007
	Fomalhaut	W.	54 47 29	3164	56 14 20	3133	57 41 49	3104	59 9 54	3075
	Venus	W.	44 6 21	3129	45 33 56	3114	47 1 49	3096	48 30 1	3082
	α Pegasi	W.	40 53 3	3430	42 14 46	3372	43 37 35	3317	45 1 27	3268
	Aldebaran	E.	42 8 0	2695	40 31 13	2681	38 54 8	2667	37 16 44	2653
	Pollux	E.	86 13 46	2766	84 38 33	2753	83 3 3	2739	81 27 15	2725
	Regulus	E.	122 15 49	2695	120 39 3	2682	119 2 0	2668	117 24 37	2654

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Dist.	XVh.	P. L. of Dist.	XVIIIh.	P. L. of Dist.	XXIh.	P. L. of Dist.
16	SUN	E.	86° 34' 11"	3088	85° 5' 47"	3108	83° 37' 43"	3120	82° 9' 58"	3136
17	Pollux	W.	110 8 11	2915	111 40 11	2929	113 11 53	2943	114 43 18	2957
	Regulus	W.	74 21 58	2936	75 55 41	2948	77 29 7	2960	79 2 18	2973
	Saturn	E.	20 56 19	2934	19 24 31	2946	17 53 11	2972	16 22 23	2999
	SUN	E.	74 55 50	3210	73 29 52	3223	72 4 11	3236	70 38 45	3249
18	Regulus	W.	86 44 35	2924	88 16 23	2934	89 47 59	2943	91 19 23	2962
	Spica	W.	33 30 18	2904	35 0 39	2909	36 30 53	3003	38 1 2	3009
	SUN	E.	63 35 12	3306	62 11 10	3318	60 47 19	3329	59 23 41	3338
19	Regulus	W.	98 53 45	2991	100 24 9	2998	101 54 25	3004	103 24 32	3010
	Spica	W.	45 30 13	3038	46 59 45	3038	48 29 11	3043	49 58 31	3047
	SUN	E.	52 28 7	3332	51 5 30	3339	49 43 1	3396	48 20 40	3404
20	Regulus	W.	110 53 24	3037	112 22 51	3041	113 52 14	3045	115 21 31	3048
	Spica	W.	57 23 56	3066	58 52 47	3070	60 21 33	3073	61 50 16	3076
	SUN	E.	41 30 50	3434	40 9 12	3439	38 47 40	3444	37 26 13	3449
21	Spica	W.	69 13 1	3097	70 41 26	3099	72 9 49	3091	73 38 9	3092
	SUN	E.	30 40 19	3471	29 19 22	3475	27 58 30	3479	26 37 42	3483
26	SUN	W.	23 50 18	3431	25 12 11	3413	26 34 13	3405	27 56 24	3398
	α Arietis	E.	65 54 24	3192	64 27 53	3192	63 1 22	3182	61 34 51	3182
	Aldebaran	E.	97 44 13	3010	96 14 13	3006	94 44 6	3001	93 13 54	2995
27	SUN	W.	34 49 26	3390	36 12 28	3351	37 35 40	3345	38 59 0	3336
	α Arietis	E.	54 22 27	3198	52 56 4	3192	51 29 45	3194	50 3 29	3199
	Aldebaran	E.	85 41 12	2967	84 10 18	2961	82 39 16	2954	81 8 6	2947
28	SUN	W.	45 58 7	3298	47 22 27	3263	48 46 58	3273	50 11 41	3284
	α Arietis	E.	42 53 52	3236	41 28 26	3249	40 3 15	3254	38 38 21	3261
	Aldebaran	E.	73 30 2	3011	71 57 57	2993	70 25 41	2994	68 53 14	2985
29	SUN	W.	57 18 13	3210	58 44 10	3199	60 10 20	3187	61 36 45	3175
	Fomalhaut	W.	38 25 42	3716	39 42 13	3649	40 59 54	3588	42 18 40	3533
	Venus	W.	26 57 4	3290	28 21 27	3278	29 46 4	3266	31 10 55	3253
	α Arietis	E.	31 40 12	3437	30 18 26	3474	28 57 33	3481	27 37 43	3499
	Aldebaran	E.	61 8 5	2988	59 34 26	2937	58 0 33	2917	56 26 27	2905
	Pollux	E.	104 55 9	2912	103 23 6	2901	101 50 49	2890	100 18 17	2878
30	SUN	W.	68 52 34	3110	70 20 31	3096	71 48 45	3082	73 17 17	3068
	Fomalhaut	W.	49 6 47	3305	50 30 53	3267	51 55 44	3231	53 21 16	3198
	Venus	W.	38 18 58	3187	39 45 23	3173	41 12 5	3168	42 39 4	3143
	α Pegasi	W.	35 38 51	3719	36 55 18	3636	38 13 13	3561	39 32 30	3492
	Aldebaran	E.	48 32 13	2747	46 56 36	2734	45 20 41	2721	43 44 29	2706
	Pollux	E.	92 31 48	2617	90 57 42	2606	89 23 21	2792	87 48 42	2779
31	SUN	W.	80 44 27	2992	82 14 50	2976	83 45 33	2959	85 16 37	2943
	Fomalhaut	W.	60 38 34	3047	62 7 49	3021	63 37 36	2994	65 7 56	2969
	Venus	W.	49 58 33	3066	51 27 24	3050	52 56 35	3033	54 26 7	3017
	α Pegasi	W.	46 26 16	3220	47 52 1	3176	49 18 39	3135	50 46 6	3096
	Aldebaran	E.	35 39 1	2639	34 0 59	2624	32 22 36	2610	30 43 54	2594
	Pollux	E.	79 51 9	2712	78 14 45	2698	76 38 2	2684	75 1 1	2670
	Regulus	E.	115 46 55	2640	114 8 54	2623	112 30 33	2610	110 51 52	2595

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S						Sideral Time of the Semi-diameter passing the Meridian.	Equation of Time, to be added to Apparent Time.	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Semi-diameter.				
Sat.	1	^h 20 ^m 57 ^s 46.29	10.200	S.17° 12' 38".7	42.39	16° 16' 08"	68.32	13 47.84	0.343	
Sun.	2	21 1 50.69	10.165	16 55 31.8	43.14	16 15.94	68.20	13 55.66	0.308	
Mon.	3	21 5 54.25	10.130	16 38 7.3	43.87	16 15.79	68.09	14 2.64	0.273	
Tues.	4	21 9 56.97	10.095	16 20 25.4	44.59	16 15.63	67.97	14 8.79	0.239	
Wed.	5	21 13 58.85	10.060	16 2 26.5	45.28	16 15.47	67.86	14 14.11	0.205	
Thur.	6	21 17 59.91	10.026	15 44 11.2	45.96	16 15.31	67.74	14 18.60	0.171	
Fri.	7	21 22 0.15	9.992	15 25 39.8	46.62	16 15.14	67.63	14 22.27	0.137	
Sat.	8	21 25 59.58	9.959	15 6 52.7	47.27	16 14.97	67.51	14 25.14	0.104	
Sun.	9	21 29 58.22	9.926	14 47 50.3	47.90	16 14.79	67.40	14 27.22	0.071	
Mon.	10	21 33 56.06	9.894	14 28 33.2	48.51	16 14.61	67.29	14 28.50	0.038	
Tues.	11	21 37 53.12	9.862	14 9 1.7	49.10	16 14.42	67.18	14 29.01	0.006	
Wed.	12	21 41 49.42	9.831	13 49 16.2	49.68	16 14.23	67.07	14 28.76	0.026	
Thur.	13	21 45 44.97	9.800	13 29 16.9	50.24	16 14.03	66.96	14 27.76	0.057	
Fri.	14	21 49 39.79	9.769	13 9 4.1	50.79	16 13.83	66.85	14 26.03	0.087	
Sat.	15	21 53 33.88	9.739	12 48 38.6	51.32	16 13.62	66.74	14 23.57	0.117	
Sun.	16	21 57 27.25	9.710	12 28 0.6	51.83	16 13.41	66.64	14 20.40	0.146	
Mon.	17	22 1 19.92	9.681	12 7 10.7	52.32	16 13.20	66.54	14 16.53	0.175	
Tues.	18	22 5 11.90	9.653	11 46 9.2	52.79	16 12.98	66.44	14 11.97	0.203	
Wed.	19	22 9 3.20	9.625	11 24 56.5	53.26	16 12.76	66.34	14 6.73	0.231	
Thur.	20	22 12 53.84	9.597	11 3 33.0	53.69	16 12.54	66.24	14 0.83	0.259	
Fri.	21	22 16 43.82	9.570	10 41 59.1	54.11	16 12.32	66.14	13 54.27	0.286	
Sat.	22	22 20 33.15	9.543	10 20 15.3	54.52	16 12.09	66.05	13 47.06	0.313	
Sun.	23	22 24 21.84	9.517	9 58 22.1	54.91	16 11.87	65.96	13 39.22	0.339	
Mon.	24	22 28 9.91	9.491	9 36 19.9	55.28	16 11.64	65.87	13 30.76	0.365	
Tues.	25	22 31 57.37	9.466	9 14 9.1	55.63	16 11.41	65.78	13 21.70	0.390	
Wed.	26	22 35 44.24	9.441	8 51 49.9	55.97	16 11.18	65.70	13 12.05	0.415	
Thur.	27	22 39 30.53	9.417	8 29 22.8	56.29	16 10.95	65.62	13 1.80	0.439	
Fri.	28	22 43 16.24	9.394	8 6 48.3	56.59	16 10.71	65.54	12 50.98	0.462	
Sat.	29	22 47 1.89	9.372	7 44 6.8	56.87	16 10.48	65.46	12 39.61	0.485	
Sun.	30	22 50 46.02	9.350	S. 7 21 18.8	57.14	16 10.24	65.39	12 27.72	0.507	

NOTE. — Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sideral Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be subtracted from Mean Time.	Diff. for 1 hour.	Sidereal Time.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.			
		^h ^m ^s	^s	[°] ['] ["]	["]	^m ^s	^s	^h ^m ^s
Sat.	1	20 57 43.94	10.900	S. 17 12 48.4	42.39	13 47.75	0.343	20 43 56.19
Sun.	2	21 1 48.33	10.165	16 55 41.8	43.14	13 55.59	0.308	20 47 52.74
Mon.	3	21 5 51.88	10.130	16 38 17.5	43.87	14 2.58	0.273	20 51 49.30
Tues.	4	21 9 54.59	10.095	16 20 35.9	44.59	14 8.74	0.239	20 55 45.85
Wed.	5	21 13 56.47	10.060	16 2 37.3	45.28	14 14.06	0.205	20 59 42.41
Thur.	6	21 17 57.52	10.026	15 44 22.2	45.96	14 18.56	0.171	21 3 38.96
Fri.	7	21 21 57.76	9.992	15 25 51.0	46.62	14 22.25	0.137	21 7 35.51
Sat.	8	21 25 57.19	9.959	15 7 4.1	47.27	14 25.12	0.104	21 11 32.07
Sun.	9	21 29 55.83	9.926	14 48 1.9	47.90	14 27.21	0.071	21 15 28.62
Mon.	10	21 33 53.67	9.894	14 28 44.9	48.51	14 28.49	0.038	21 19 25.18
Tues.	11	21 37 50.74	9.862	14 9 13.5	49.10	14 29.01	0.006	21 23 21.73
Wed.	12	21 41 47.05	9.831	13 49 28.1	49.68	14 28.77	0.026	21 27 18.28
Thur.	13	21 45 42.61	9.800	13 29 28.9	50.24	14 27.77	0.057	21 31 14.84
Fri.	14	21 49 37.44	9.769	13 9 16.3	50.79	14 26.05	0.087	21 35 11.39
Sat.	15	21 53 31.54	9.739	12 48 50.9	51.32	14 23.60	0.117	21 39 7.94
Sun.	16	21 57 24.93	9.710	12 28 13.0	51.83	14 20.43	0.146	21 43 4.50
Mon.	17	22 1 17.62	9.681	12 7 23.1	52.32	14 16.57	0.175	21 47 1.05
Tues.	18	22 5 9.62	9.653	11 46 21.7	52.79	14 12.02	0.203	21 50 57.60
Wed.	19	22 9 0.94	9.625	11 25 9.0	53.25	14 6.78	0.231	21 54 54.16
Thur.	20	22 12 51.60	9.597	11 3 45.5	53.69	14 0.89	0.259	21 58 50.71
Fri.	21	22 16 41.60	9.570	10 42 11.6	54.11	13 54.34	0.286	22 2 47.26
Sat.	22	22 20 30.96	9.543	10 20 27.9	54.52	13 47.14	0.313	22 6 43.82
Sun.	23	22 24 19.67	9.517	9 58 34.7	54.91	13 39.30	0.339	22 10 40.37
Mon.	24	22 28 7.76	9.491	9 36 32.4	55.28	13 30.84	0.365	22 14 36.92
Tues.	25	22 31 55.26	9.466	9 14 21.4	55.63	13 21.78	0.390	22 18 33.48
Wed.	26	22 35 42.17	9.441	8 52 2.1	55.97	13 12.14	0.415	22 22 30.03
Thur.	27	22 39 28.48	9.417	8 29 35.0	56.29	13 1.90	0.439	22 26 26.58
Fri.	28	22 43 14.21	9.394	8 7 0.4	56.59	12 51.08	0.462	22 30 23.13
Sat.	29	22 46 59.40	9.372	7 44 18.8	56.87	12 39.71	0.485	22 34 19.69
Sun.	30	22 50 44.07	9.350	S. 7 21 30.7	57.14	12 27.83	0.507	22 38 16.24

NOTE. — The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal Oh.
		True LONGITUDE.		Diff. for 1 hour.	LATITUDE.			
		λ	λ'					
1	32	311° 58' 26.0	58' 27.5	152.18	—0.70	9.9936899	26.2	3 15 31.69
2	33	312 59 17.6	59 19.0	152.12	0.72	.9937538	27.0	3 11 35.79
3	34	314 0 7.8	0 9.1	152.06	0.72	.9938197	27.9	3 7 39.88
4	35	315 0 56.6	0 57.8	152.00	0.69	.9938877	28.8	3 3 43.98
5	36	316 1 44.0	1 45.1	151.94	0.62	.9939580	29.7	2 59 48.07
6	37	317 2 30.0	2 30.9	151.88	0.53	.9940307	30.7	2 55 52.15
7	38	318 3 14.5	3 15.3	151.82	0.43	.9941057	31.7	2 51 56.24
8	39	319 3 57.7	3 58.4	151.77	0.31	.9941831	32.7	2 48 0.33
9	40	320 4 39.6	4 40.2	151.71	0.17	.9942629	33.7	2 44 4.42
10	41	321 5 20.2	5 20.7	151.66	—0.04	.9943450	34.6	2 40 8.52
11	42	322 5 59.5	5 59.9	151.61	+0.09	.9944293	35.5	2 36 12.61
12	43	323 6 37.6	6 37.9	151.56	0.22	.9945157	36.4	2 32 16.70
13	44	324 7 14.6	7 14.8	151.51	0.32	.9946042	37.2	2 28 20.79
14	45	325 7 50.4	7 50.5	151.46	0.41	.9946947	38.0	2 24 24.89
15	46	326 8 24.9	8 24.9	151.41	0.47	.9947868	38.7	2 20 28.98
16	47	327 8 58.2	8 58.1	151.36	0.50	.9948805	39.3	2 16 33.07
17	48	328 9 30.2	9 30.0	151.31	0.49	.9949756	39.9	2 12 37.16
18	49	329 10 1.0	10 0.7	151.25	0.45	.9950721	40.4	2 8 41.26
19	50	330 10 30.5	10 30.1	151.19	0.37	.9951698	40.9	2 4 45.35
20	51	331 10 58.6	10 58.1	151.13	0.28	.9952685	41.3	2 0 49.44
21	52	332 11 25.2	11 24.6	151.07	0.18	.9953682	41.7	1 56 53.53
22	53	333 11 50.2	11 49.5	151.00	+0.06	.9954687	42.0	1 52 57.62
23	54	334 12 13.6	12 12.8	150.93	—0.07	.9955699	42.3	1 49 1.71
24	55	335 12 35.3	12 34.4	150.86	0.20	.9956717	42.5	1 45 5.80
25	56	336 12 55.1	12 54.1	150.79	0.33	.9957742	42.8	1 41 9.90
26	57	337 13 13.1	13 12.0	150.71	0.35	.9958773	43.1	1 37 14.00
27	58	338 13 29.2	13 28.0	150.63	0.54	.9959812	43.4	1 33 18.09
28	59	339 13 43.3	13 42.0	150.54	0.60	.9960859	43.8	1 29 22.19
29	60	340 13 55.3	13 53.9	150.45	0.63	.9961914	44.2	1 25 26.28
30	61	341 14 5.2	14 3.7	150.36	—0.63	9.9962979	44.6	1 21 30.37

NOTE: λ corresponds to the true equinox of the date, λ' to the mean equinox of January 0d.

GREENWICH MEAN TIME.

THE MOON'S

THE MOON'S									
Day of the Month.	SEMI- DIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.	Diff. for 1 hour.		
							h	m	
1	15 39.3	15 46.1	57 20.7	+2.03	57 45.6	+2.11	5 59.7	2.08	7.7
2	15 53.1	16 0.3	58 11.4	2.17	58 37.6	2.18	6 51.3	2.22	8.7
3	16 7.4	16 14.3	59 3.8	2.16	59 29.4	2.08	7 46.5	2.37	9.7
4	16 21.0	16 27.1	59 53.7	1.95	60 16.1	1.76	8 45.0	2.50	10.7
5	16 32.5	16 37.0	60 36.0	1.52	60 52.6	1.22	9 46.0	2.57	11.7
6	16 40.5	16 42.8	61 5.4	0.88	61 13.8	+0.50	10 48.0	2.58	12.7
7	16 43.8	16 43.4	61 17.5	+0.10	61 16.3	-0.31	11 49.1	2.51	13.7
8	16 41.8	16 38.8	61 10.1	-0.71	60 59.2	1.10	12 48.2	2.40	14.7
9	16 34.6	16 29.3	60 43.8	1.45	60 24.4	1.76	13 44.4	2.28	15.7
10	16 23.1	16 16.2	60 1.6	2.01	59 36.1	2.21	14 37.9	2.18	16.7
11	16 8.7	16 0.9	59 8.6	2.35	58 39.8	2.42	15 29.0	2.09	17.7
12	15 52.9	15 44.9	58 10.5	2.44	57 41.2	2.41	16 18.4	2.03	18.7
13	15 37.1	15 29.6	57 12.6	2.34	56 45.1	2.23	17 6.8	2.00	19.7
14	15 22.6	15 16.0	56 19.2	2.08	55 55.1	1.92	17 54.7	1.99	20.7
15	15 10.0	15 4.6	55 33.1	1.74	55 13.4	1.55	18 42.4	1.99	21.7
16	14 59.9	14 55.8	54 56.0	1.35	54 41.0	1.15	19 30.1	1.99	22.7
17	14 52.4	14 49.6	54 28.5	0.95	54 18.3	0.75	20 17.8	1.98	23.7
18	14 47.5	14 46.0	54 10.4	0.56	54 4.8	0.38	21 5.3	1.97	24.7
19	14 45.0	14 44.6	54 1.3	-0.21	53 59.8	-0.05	21 52.3	1.95	25.7
20	14 44.7	14 45.3	54 0.2	+0.10	54 2.4	+0.24	22 38.8	1.92	26.7
21	14 46.3	14 47.7	54 6.1	0.37	54 11.2	0.48	23 24.5	1.89	27.7
22	14 49.5	14 51.5	54 17.6	0.58	54 25.2	0.68	δ		28.7
23	14 53.9	14 56.5	54 33.9	0.76	54 43.5	0.84	0 9.6	1.86	29.7
24	14 59.4	15 2.5	54 54.0	0.91	55 5.4	0.99	0 54.1	1.85	0.9
25	15 5.8	15 9.4	55 17.7	1.06	55 30.8	1.12	1 38.6	1.86	1.9
26	15 13.2	15 17.1	55 44.6	1.18	55 59.2	1.25	2 23.5	1.89	2.9
27	15 21.3	15 25.7	56 14.6	1.31	56 30.8	1.38	3 9.3	1.94	3.9
28	15 30.3	15 35.2	56 47.7	1.44	57 5.4	1.51	3 56.8	2.02	4.9
29	15 40.2	15 45.3	57 23.8	1.56	57 42.8	1.60	4 46.6	2.12	5.9
30	15 50.6	15 56.0	58 2.3	+1.63	58 22.0	+1.64	5 39.1	2.24	6.9

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SATURDAY 1.					MONDAY 3.				
0	2 31 36.67	2.1618	N. 9 57 34.1	9.132	0	4 20 44.29	2.4030	N. 16 9 35.7	5.245
1	2 33 45.92	2.1664	10 6 40.8	9.091	1	4 23 8.64	2.4065	16 15 29.6	5.262
2	2 35 55.44	2.1610	10 15 45.0	9.049	2	4 25 33.31	2.4139	16 21 17.9	5.767
3	2 38 5.24	2.1656	10 24 46.7	9.006	3	4 27 58.31	2.4193	16 27 0.5	5.661
4	2 40 15.31	2.1703	10 33 45.7	8.961	4	4 30 23.63	2.4247	16 32 37.2	5.663
5	2 42 25.67	2.1750	10 42 42.0	8.916	5	4 32 49.28	2.4301	16 38 8.0	5.464
6	2 44 36.31	2.1796	10 51 35.6	8.870	6	4 35 15.25	2.4354	16 43 32.9	5.364
7	2 46 47.24	2.1843	11 0 26.4	8.823	7	4 37 41.54	2.4408	16 48 51.8	5.364
8	2 48 58.46	2.1894	11 9 14.3	8.774	8	4 40 8.15	2.4461	16 54 4.6	5.162
9	2 51 9.97	2.1943	11 17 59.3	8.734	9	4 42 35.08	2.4514	16 59 11.3	5.069
10	2 53 21.78	2.1992	11 26 41.2	8.673	10	4 45 2.32	2.4566	17 4 11.7	4.966
11	2 55 33.88	2.2042	11 35 20.1	8.632	11	4 47 29.88	2.4619	17 9 5.9	4.851
12	2 57 46.28	2.2093	11 43 55.9	8.570	12	4 49 57.75	2.4671	17 13 53.8	4.744
13	2 59 58.98	2.2143	11 52 28.5	8.517	13	4 52 25.93	2.4723	17 18 35.2	4.637
14	3 2 11.98	2.2192	12 0 57.9	8.464	14	4 54 54.42	2.4775	17 23 10.2	4.528
15	3 4 25.29	2.2243	12 9 23.9	8.406	15	4 57 23.21	2.4828	17 27 38.6	4.418
16	3 6 38.90	2.2294	12 17 46.6	8.349	16	4 59 52.30	2.4873	17 32 0.4	4.306
17	3 8 52.82	2.2346	12 26 5.8	8.291	17	5 2 21.69	2.4923	17 36 15.6	4.197
18	3 11 7.05	2.2398	12 34 21.6	8.232	18	5 4 51.38	2.4972	17 40 24.0	4.084
19	3 13 21.59	2.2450	12 42 33.8	8.173	19	5 7 21.36	2.5021	17 44 25.7	3.971
20	3 15 36.45	2.2502	12 50 42.3	8.112	20	5 9 51.63	2.5069	17 48 20.5	3.856
21	3 17 51.62	2.2555	12 58 47.2	8.050	21	5 12 22.19	2.5117	17 52 8.4	3.741
22	3 20 7.11	2.2608	13 6 48.3	7.986	22	5 14 53.03	2.5163	17 55 49.4	3.624
23	3 22 22.92	2.2661	N. 13 14 45.5	7.922	23	5 17 24.15	2.5210	N. 17 59 23.3	3.507
SUNDAY 2.					TUESDAY 4.				
0	3 24 39.05	2.2714	N. 13 22 38.9	7.856	0	5 19 55.55	2.5256	N. 18 2 50.2	3.398
1	3 26 55.49	2.2768	13 30 28.3	7.790	1	5 22 27.22	2.5301	18 6 9.9	3.298
2	3 29 12.26	2.2822	13 38 13.7	7.722	2	5 24 59.17	2.5346	18 9 22.4	3.148
3	3 31 29.35	2.2876	13 45 55.0	7.653	3	5 27 31.38	2.5390	18 12 27.7	3.027
4	3 33 46.77	2.2930	13 53 32.1	7.583	4	5 30 3.85	2.5433	18 15 25.7	2.906
5	3 36 4.51	2.2984	14 1 5.0	7.513	5	5 32 36.58	2.5476	18 18 16.3	2.782
6	3 38 22.58	2.3038	14 8 33.6	7.441	6	5 35 9.56	2.5517	18 20 59.5	2.656
7	3 40 40.98	2.3093	14 15 57.9	7.368	7	5 37 42.79	2.5558	18 23 35.3	2.533
8	3 42 59.70	2.3148	14 23 17.7	7.293	8	5 40 16.26	2.5598	18 26 3.5	2.407
9	3 45 18.75	2.3203	14 30 33.0	7.217	9	5 42 49.97	2.5638	18 28 24.2	2.281
10	3 47 38.14	2.3258	14 37 43.7	7.140	10	5 45 23.92	2.5677	18 30 37.3	2.154
11	3 49 57.85	2.3313	14 44 49.8	7.063	11	5 47 58.10	2.5715	18 32 42.7	2.027
12	3 52 17.90	2.3368	14 51 51.2	6.983	12	5 50 32.51	2.5752	18 34 40.5	1.898
13	3 54 38.28	2.3423	14 58 47.8	6.903	13	5 53 7.14	2.5789	18 36 30.5	1.768
14	3 56 58.99	2.3478	15 5 39.6	6.821	14	5 55 41.98	2.5824	18 38 12.7	1.638
15	3 59 20.03	2.3534	15 12 26.4	6.739	15	5 58 17.03	2.5859	18 39 47.1	1.508
16	4 1 41.40	2.3590	15 19 8.3	6.655	16	6 0 52.29	2.5892	18 41 13.7	1.376
17	4 4 3.10	2.3646	15 25 45.1	6.571	17	6 3 27.74	2.5925	18 42 32.3	1.244
18	4 6 25.14	2.3700	15 32 16.8	6.485	18	6 6 3.39	2.5957	18 43 43.0	1.112
19	4 8 47.50	2.3755	15 38 43.3	6.398	19	6 8 39.23	2.5988	18 44 45.8	0.979
20	4 11 10.20	2.3810	15 45 4.6	6.310	20	6 11 15.25	2.6018	18 45 40.5	0.846
21	4 13 33.23	2.3866	15 51 20.5	6.221	21	6 13 51.45	2.6047	18 46 27.2	0.711
22	4 15 56.59	2.3920	15 57 31.1	6.130	22	6 16 27.82	2.6075	18 47 5.8	0.576
23	4 18 20.28	2.3975	16 3 36.2	6.038	23	6 19 4.35	2.6102	18 47 36.3	0.441
24	4 20 44.29	2.4030	N. 16 9 35.7	5.945	24	6 21 41.04	2.6128	N. 18 47 58.7	0.306

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
WEDNESDAY 5.					FRIDAY 7.				
0	6 21 41.04	2.6128	N.18 47 58.7	0.586	0	8 26 2.23	2.6104	N.16 24 49.4	6.182
1	6 24 17.89	2.6153	18 48 12.9	0.589	1	8 30 38.78	2.6078	16 18 36.6	6.273
2	6 26 54.88	2.6177	18 48 19.0	0.593	2	8 33 15.17	2.6062	16 12 16.6	6.363
3	6 29 32.01	2.6199	18 48 16.9	0.594	3	8 35 51.40	2.6026	16 5 49.5	6.512
4	6 32 9.28	2.6221	18 48 6.5	0.591	4	8 38 27.47	2.6007	15 59 15.2	6.699
5	6 34 46.68	2.6242	18 47 47.9	0.579	5	8 41 3.37	2.6008	15 52 33.9	6.746
6	6 37 24.20	2.6262	18 47 21.0	0.517	6	8 43 39.09	2.6008	15 45 45.7	6.861
7	6 40 1.83	2.6281	18 46 45.8	0.665	7	8 46 14.63	2.6008	15 38 50.6	6.975
8	6 42 39.57	2.6298	18 46 2.4	0.784	8	8 48 49.99	2.6077	15 31 48.7	7.088
9	6 45 17.41	2.6316	18 45 10.6	0.983	9	8 51 25.16	2.6046	15 24 40.0	7.200
10	6 47 55.35	2.6330	18 44 10.5	1.071	10	8 54 0.13	2.6012	15 17 24.7	7.310
11	6 50 33.38	2.6345	18 43 2.1	1.309	11	8 56 34.91	2.6779	15 10 2.8	7.490
12	6 53 11.49	2.6366	18 41 45.4	1.348	12	8 59 9.48	2.6746	15 2 84.3	7.528
13	6 55 49.68	2.6370	18 40 20.3	1.496	13	9 1 43.85	2.6711	14 54 59.4	7.636
14	6 58 27.93	2.6380	18 38 46.9	1.627	14	9 4 18.01	2.6676	14 47 18.1	7.741
15	7 1 6.25	2.6390	18 37 5.2	1.765	15	9 6 51.96	2.6640	14 39 30.5	7.846
16	7 3 44.62	2.6399	18 35 15.1	1.904	16	9 9 25.69	2.6604	14 31 36.7	7.947
17	7 6 23.04	2.6407	18 33 16.7	2.043	17	9 11 59.20	2.6567	14 23 36.8	8.049
18	7 9 1.51	2.6415	18 31 9.9	2.182	18	9 14 32.49	2.6530	14 15 30.8	8.149
19	7 11 40.01	2.6419	18 28 54.8	2.321	19	9 17 5.55	2.6492	14 7 18.9	8.248
20	7 14 18.54	2.6428	18 26 31.4	2.460	20	9 19 38.39	2.6453	13 59 1.1	8.346
21	7 16 57.09	2.6436	18 23 59.6	2.598	21	9 22 10.99	2.6414	13 50 87.5	8.441
22	7 19 35.65	2.6438	18 21 19.6	2.736	22	9 24 43.36	2.6376	13 42 8.2	8.536
23	7 22 14.22	2.6439	N.18 18 31.3	2.874	23	9 27 15.49	2.6338	N.13 33 33.2	8.639
THURSDAY 6.					SATURDAY 8.				
0	7 24 52.80	2.6428	N.18 15 34.7	2.913	0	9 29 47.38	2.6298	N.13 24 52.7	8.721
1	7 27 31.37	2.6428	18 12 29.9	3.149	1	9 32 19.03	2.6284	13 16 6.7	8.811
2	7 30 9.93	2.6425	18 9 16.8	3.386	2	9 34 50.43	2.6273	13 7 15.4	8.899
3	7 32 48.47	2.6421	18 5 55.5	3.423	3	9 37 21.58	2.6171	12 58 18.8	8.987
4	7 35 26.98	2.6416	18 2 26.1	3.569	4	9 39 52.48	2.6129	12 49 17.0	9.073
5	7 38 5.46	2.6411	17 58 48.5	3.695	5	9 42 23.13	2.6087	12 40 10.1	9.167
6	7 40 43.91	2.6404	17 55 2.7	3.811	6	9 44 53.52	2.6046	12 30 58.1	9.240
7	7 43 22.31	2.6396	17 51 8.8	3.966	7	9 47 23.66	2.6002	12 21 41.3	9.321
8	7 46 0.66	2.6387	17 47 6.8	4.100	8	9 49 53.54	2.5969	12 12 19.6	9.400
9	7 48 38.95	2.6377	17 42 56.8	4.233	9	9 52 23.16	2.5916	12 2 53.2	9.478
10	7 51 17.18	2.6366	17 38 38.8	4.366	10	9 54 52.53	2.5872	11 53 22.2	9.556
11	7 53 55.33	2.6363	17 34 12.8	4.499	11	9 57 21.63	2.5828	11 43 46.6	9.631
12	7 56 33.41	2.6358	17 29 38.9	4.631	12	9 59 50.47	2.5784	11 34 6.5	9.706
13	7 59 11.40	2.6355	17 24 57.1	4.763	13	10 2 19.04	2.5740	11 24 22.0	9.777
14	8 1 49.31	2.6350	17 20 7.4	4.896	14	10 4 47.35	2.5696	11 14 33.3	9.847
15	8 4 27.13	2.6294	17 15 9.9	5.028	15	10 7 15.39	2.5652	11 4 40.4	9.916
16	8 7 4.84	2.6276	17 10 4.7	5.162	16	10 9 43.17	2.5607	10 54 43.4	9.988
17	8 9 42.45	2.6266	17 4 51.7	5.290	17	10 12 10.67	2.5562	10 44 42.5	10.049
18	8 12 19.94	2.6230	16 59 31.1	5.407	18	10 14 37.91	2.5518	10 34 37.6	10.118
19	8 14 57.32	2.6219	16 54 2.9	5.533	19	10 17 4.88	2.5473	10 24 28.9	10.176
20	8 17 34.57	2.6198	16 48 27.1	5.669	20	10 19 31.58	2.5428	10 14 16.5	10.236
21	8 20 11.69	2.6178	16 42 43.8	5.784	21	10 21 58.01	2.5382	10 4 0.5	10.296
22	8 22 48.68	2.6168	16 36 53.0	5.907	22	10 24 24.16	2.5336	9 53 41.0	10.354
23	8 25 25.53	2.6129	16 30 54.9	6.030	23	10 26 50.05	2.5293	9 43 18.0	10.411
24	8 28 2.23	2.6104	N.16 24 49.4	6.152	24	10 29 15.67	2.5248	N. 9 32 51.7	10.466

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SUNDAY 9.					TUESDAY 11.				
0	10 29 15.67	2.4248	N. 9 32 51.7	10.466	0	12 20 44.08	2.2303	N. 0 35 49.5	11.374
1	10 31 41.02	2.4208	9 22 22.1	10.519	1	12 22 57.80	2.2370	0 24 27.4	11.361
2	10 34 6.10	2.4158	9 11 49.4	10.571	2	12 25 11.32	2.2228	0 13 6.2	11.346
3	10 36 30.91	2.4119	9 1 13.6	10.621	3	12 27 24.65	2.2206	N. 0 1 45.9	11.331
4	10 38 55.44	2.4067	8 50 34.9	10.669	4	12 29 37.79	2.2174	S. 0 9 33.5	11.314
5	10 41 19.70	2.4022	8 39 53.3	10.716	5	12 31 50.74	2.2148	0 20 51.8	11.297
6	10 43 43.70	2.3978	8 29 9.0	10.761	6	12 34 3.51	2.2118	0 32 9.1	11.278
7	10 46 7.43	2.3933	8 18 22.0	10.806	7	12 36 16.10	2.2083	0 43 25.2	11.268
8	10 48 30.89	2.3888	8 7 32.3	10.848	8	12 38 28.51	2.2053	0 54 40.1	11.257
9	10 50 54.08	2.3843	7 56 40.1	10.889	9	12 40 40.74	2.2022	1 5 53.7	11.246
10	10 53 17.01	2.3799	7 45 45.6	10.928	10	12 42 52.79	2.1994	1 17 6.0	11.193
11	10 55 39.67	2.3754	7 34 48.8	10.966	11	12 45 4.67	2.1966	1 28 16.8	11.168
12	10 58 2.06	2.3711	7 23 49.7	11.002	12	12 47 16.39	2.1938	1 39 26.2	11.148
13	11 0 24.19	2.3667	7 12 48.5	11.037	13	12 49 27.94	2.1911	1 50 34.0	11.117
14	11 2 46.06	2.3623	7 1 45.3	11.070	14	12 51 39.32	2.1884	2 1 40.3	11.090
15	11 5 7.67	2.3579	6 50 40.1	11.102	15	12 53 50.54	2.1867	2 12 44.9	11.063
16	11 7 29.01	2.3536	6 39 33.0	11.133	16	12 56 1.60	2.1830	2 23 47.9	11.034
17	11 9 50.09	2.3493	6 28 24.1	11.161	17	12 58 12.50	2.1804	2 34 49.1	11.004
18	11 12 10.92	2.3451	6 17 13.6	11.188	18	13 0 23.25	2.1778	2 45 48.4	10.973
19	11 14 31.49	2.3408	6 6 1.5	11.216	19	13 2 33.84	2.1753	2 56 45.9	10.942
20	11 16 51.81	2.3366	5 54 47.8	11.240	20	13 4 44.29	2.1728	3 7 41.4	10.909
21	11 19 11.87	2.3323	5 43 32.7	11.263	21	13 6 54.59	2.1704	3 18 35.0	10.876
22	11 21 31.68	2.3281	5 32 16.3	11.284	22	13 9 4.74	2.1680	3 29 26.5	10.842
23	11 23 51.24	2.3239	N. 5 20 58.6	11.304	23	13 11 14.75	2.1667	S. 3 40 16.0	10.807
MONDAY 10.					WEDNESDAY 12.				
0	11 26 10.55	2.3197	N. 5 9 39.8	11.322	0	13 13 24.63	2.1634	S. 3 51 3.3	10.770
1	11 28 29.61	2.3156	4 58 19.9	11.340	1	13 15 34.37	2.1612	4 1 48.4	10.733
2	11 30 48.42	2.3116	4 46 59.0	11.356	2	13 17 43.97	2.1590	4 12 31.3	10.696
3	11 33 6.99	2.3076	4 35 37.2	11.370	3	13 19 53.44	2.1568	4 23 11.9	10.658
4	11 35 25.32	2.3035	4 24 14.6	11.383	4	13 22 2.78	2.1546	4 33 50.1	10.617
5	11 37 43.41	2.2995	4 12 51.2	11.396	5	13 24 11.99	2.1525	4 44 26.0	10.577
6	11 40 1.26	2.2956	4 1 27.1	11.408	6	13 26 21.08	2.1504	4 54 59.4	10.536
7	11 42 18.87	2.2916	3 50 2.5	11.415	7	13 28 30.04	2.1484	5 5 30.3	10.494
8	11 44 36.25	2.2877	3 38 37.3	11.422	8	13 30 38.89	2.1464	5 15 58.7	10.451
9	11 46 53.40	2.2838	3 27 11.7	11.429	9	13 32 47.62	2.1445	5 26 24.5	10.408
10	11 49 10.31	2.2800	3 15 45.8	11.434	10	13 34 56.23	2.1426	5 36 47.7	10.364
11	11 51 26.99	2.2762	3 4 19.6	11.438	11	13 37 4.73	2.1408	5 47 8.2	10.319
12	11 53 43.45	2.2724	2 52 53.2	11.441	12	13 39 13.12	2.1390	5 57 26.0	10.273
13	11 55 59.68	2.2687	2 41 26.7	11.443	13	13 41 21.40	2.1373	6 7 41.0	10.227
14	11 58 15.69	2.2651	2 30 0.2	11.441	14	13 43 29.58	2.1354	6 17 53.3	10.180
15	12 0 31.48	2.2615	2 18 33.7	11.440	15	13 45 37.65	2.1337	6 28 2.7	10.132
16	12 2 47.06	2.2579	2 7 7.4	11.437	16	13 47 45.62	2.1320	6 38 9.2	10.083
17	12 5 2.42	2.2543	1 55 41.2	11.434	17	13 49 53.49	2.1304	6 48 12.7	10.034
18	12 7 17.56	2.2508	1 44 15.3	11.429	18	13 52 1.27	2.1288	6 58 13.3	9.984
19	12 9 32.49	2.2473	1 32 49.7	11.423	19	13 54 8.95	2.1273	7 8 10.9	9.934
20	12 11 47.22	2.2438	1 21 24.6	11.416	20	13 56 16.54	2.1258	7 18 5.4	9.883
21	12 14 1.74	2.2403	1 9 59.9	11.407	21	13 58 24.04	2.1243	7 27 56.8	9.831
22	12 16 16.05	2.2370	0 58 35.8	11.397	22	14 0 31.45	2.1228	7 37 45.1	9.779
23	12 18 30.16	2.2336	0 47 12.3	11.386	23	14 2 38.78	2.1214	7 47 30.3	9.726
24	12 20 44.08	2.2303	N. 0 35 49.5	11.374	24	14 4 46.02	2.1200	S. 7 57 12.2	9.673

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
THURSDAY 13.					SATURDAY 15.				
0	14 4 46.02	2.1200	S. 7 57 12.2	9.872	0	15 45 32.28	2.0884	S. 14 29 18.6	6.492
1	14 6 53.18	2.1187	8 6 50.8	9.617	1	15 47 37.58	2.0883	14 35 45.9	6.416
2	14 9 0.27	2.1174	8 16 26.2	9.562	2	15 49 42.88	2.0882	14 42 8.6	6.340
3	14 11 7.28	2.1162	8 25 58.3	9.506	3	15 51 48.17	2.0882	14 48 26.8	6.264
4	14 13 14.21	2.1149	8 35 27.0	9.450	4	15 53 53.46	2.0881	14 54 40.3	6.187
5	14 15 21.07	2.1137	8 44 52.3	9.393	5	15 55 58.74	2.0880	15 0 49.2	6.109
6	14 17 27.86	2.1126	8 54 14.2	9.336	6	15 58 4.02	2.0879	15 6 53.4	6.032
7	14 19 34.58	2.1114	9 3 32.6	9.278	7	16 0 9.29	2.0878	15 12 53.0	5.954
8	14 21 41.23	2.1103	9 12 47.6	9.219	8	16 2 14.56	2.0878	15 18 47.9	5.876
9	14 23 47.82	2.1093	9 21 59.0	9.160	9	16 4 19.83	2.0878	15 24 38.1	5.798
10	14 25 54.34	2.1083	9 31 6.8	9.100	10	16 6 25.09	2.0877	15 30 23.6	5.719
11	14 28 0.80	2.1073	9 40 11.1	9.040	11	16 8 30.35	2.0877	15 36 4.4	5.640
12	14 30 7.21	2.1063	9 49 11.7	8.980	12	16 10 35.61	2.0877	15 41 40.4	5.561
13	14 32 13.56	2.1053	9 58 8.6	8.919	13	16 12 40.87	2.0877	15 47 11.6	5.481
14	14 34 19.85	2.1044	10 7 1.9	8.857	14	16 14 46.13	2.0876	15 52 38.1	5.401
15	14 36 26.09	2.1036	10 15 51.5	8.795	15	16 16 51.38	2.0876	15 57 59.8	5.321
16	14 38 32.28	2.1027	10 24 37.3	8.732	16	16 18 56.64	2.0877	16 3 16.7	5.242
17	14 40 38.42	2.1019	10 33 19.3	8.668	17	16 21 1.90	2.0877	16 8 28.8	5.161
18	14 42 44.51	2.1011	10 41 57.5	8.604	18	16 23 7.16	2.0878	16 13 36.0	5.080
19	14 44 50.55	2.1003	10 50 31.8	8.540	19	16 25 12.42	2.0878	16 18 38.4	4.999
20	14 46 56.55	2.0996	10 59 2.3	8.476	20	16 27 17.69	2.0878	16 23 35.9	4.918
21	14 49 2.51	2.0989	11 7 28.9	8.411	21	16 29 22.96	2.0878	16 28 28.5	4.836
22	14 51 8.42	2.0982	11 15 51.6	8.345	22	16 31 28.23	2.0878	16 33 16.3	4.754
23	14 53 14.29	2.0976	S. 11 24 10.3	8.278	23	16 33 33.50	2.0878	S. 16 37 59.1	4.672
FRIDAY 14.					SUNDAY 16.				
0	14 55 20.13	2.0969	S. 11 32 25.0	8.212	0	16 35 38.77	2.0879	S. 16 42 37.0	4.590
1	14 57 25.93	2.0963	11 40 35.7	8.145	1	16 37 44.05	2.0880	16 47 10.0	4.508
2	14 59 31.69	2.0958	11 48 42.4	8.077	2	16 39 49.33	2.0880	16 51 38.0	4.426
3	15 1 37.42	2.0953	11 56 45.0	8.009	3	16 41 54.61	2.0880	16 56 1.1	4.344
4	15 3 43.12	2.0947	12 4 43.5	7.941	4	16 43 59.89	2.0881	17 0 19.3	4.261
5	15 5 48.78	2.0942	12 12 37.9	7.872	5	16 46 5.17	2.0881	17 4 32.5	4.178
6	15 7 54.42	2.0937	12 20 28.2	7.803	6	16 48 10.46	2.0882	17 8 40.7	4.096
7	15 10 0.03	2.0933	12 28 14.3	7.733	7	16 50 15.75	2.0883	17 12 43.9	4.011
8	15 12 5.61	2.0928	12 35 56.2	7.663	8	16 52 21.05	2.0883	17 16 42.0	3.928
9	15 14 11.17	2.0924	12 43 33.9	7.593	9	16 54 26.35	2.0883	17 20 35.2	3.844
10	15 16 16.70	2.0920	12 51 7.4	7.522	10	16 56 31.65	2.0883	17 24 23.3	3.760
11	15 18 22.21	2.0917	12 58 36.6	7.451	11	16 58 36.95	2.0883	17 28 6.4	3.676
12	15 20 27.70	2.0913	13 6 1.5	7.379	12	17 0 42.25	2.0884	17 31 44.4	3.592
13	15 22 33.17	2.0910	13 13 22.1	7.307	13	17 2 47.55	2.0884	17 35 17.4	3.507
14	15 24 38.62	2.0906	13 20 38.4	7.235	14	17 4 52.86	2.0885	17 38 45.3	3.423
15	15 26 44.05	2.0903	13 27 50.3	7.162	15	17 6 58.17	2.0885	17 42 8.1	3.338
16	15 28 49.46	2.0900	13 34 57.9	7.089	16	17 9 3.48	2.0885	17 45 25.9	3.253
17	15 30 54.86	2.0898	13 42 1.1	7.016	17	17 11 8.79	2.0885	17 48 38.6	3.168
18	15 33 0.24	2.0896	13 48 59.9	6.942	18	17 13 14.10	2.0884	17 51 46.1	3.083
19	15 35 5.61	2.0894	13 55 54.2	6.868	19	17 15 19.41	2.0884	17 54 48.5	2.998
20	15 37 10.97	2.0892	14 2 44.1	6.794	20	17 17 24.71	2.0884	17 57 45.9	2.913
21	15 39 16.32	2.0890	14 9 29.5	6.719	21	17 19 30.01	2.0884	18 0 38.2	2.828
22	15 41 21.65	2.0888	14 16 10.4	6.644	22	17 21 35.32	2.0884	18 3 25.3	2.743
23	15 43 26.97	2.0886	14 22 46.8	6.568	23	17 23 40.63	2.0884	18 6 7.3	2.657
24	15 45 32.28	2.0884	S. 14 29 18.6	6.492	24	17 25 45.93	2.0883	S. 18 8 44.1	2.571

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
MONDAY 17.					WEDNESDAY 19.				
0	17 25 45.93	2.0883	S.18° 8' 44.1"	2.471	0	19 5 44.24	2.0716	S.18° 34' 39.1"	1.566
1	17 27 51.93	2.0883	18 11 15.8	2.486	1	19 7 48.53	2.0711	18 31 2.6	1.660
2	17 29 56.53	2.0882	18 13 42.3	2.399	2	19 9 52.77	2.0704	18 29 21.1	1.725
3	17 32 1.82	2.0882	18 16 3.7	2.313	3	19 11 56.97	2.0697	18 27 34.5	1.819
4	17 34 7.11	2.0881	18 18 19.9	2.227	4	19 14 1.13	2.0690	18 25 42.8	1.903
5	17 36 12.39	2.0880	18 20 30.9	2.141	5	19 16 5.24	2.0681	18 23 46.1	1.987
6	17 38 17.67	2.0879	18 22 36.8	2.055	6	19 18 9.30	2.0673	18 21 44.4	2.071
7	17 40 22.94	2.0878	18 24 37.5	1.968	7	19 20 13.31	2.0665	18 19 37.7	2.154
8	17 42 28.20	2.0877	18 26 33.0	1.882	8	19 22 17.28	2.0657	18 17 25.9	2.238
9	17 44 33.46	2.0876	18 28 23.3	1.795	9	19 24 21.20	2.0648	18 15 9.1	2.321
10	17 46 38.71	2.0874	18 30 8.5	1.710	10	19 26 25.06	2.0640	18 12 47.4	2.404
11	17 48 43.95	2.0873	18 31 48.5	1.623	11	19 28 28.88	2.0632	18 10 20.7	2.486
12	17 50 49.18	2.0871	18 33 23.3	1.537	12	19 30 32.64	2.0623	18 7 49.1	2.569
13	17 52 54.40	2.0869	18 34 52.9	1.450	13	19 32 36.35	2.0614	18 5 12.5	2.651
14	17 54 59.61	2.0867	18 36 17.3	1.363	14	19 34 40.01	2.0606	18 2 31.0	2.734
15	17 57 4.80	2.0865	18 37 36.5	1.276	15	19 36 43.61	2.0596	17 59 44.5	2.816
16	17 59 9.98	2.0863	18 38 50.4	1.189	16	19 38 47.16	2.0587	17 56 53.1	2.898
17	18 1 15.15	2.0861	18 39 59.1	1.102	17	19 40 50.65	2.0578	17 53 56.8	2.979
18	18 3 20.31	2.0859	18 41 2.7	1.015	18	19 42 54.09	2.0569	17 50 55.6	3.060
19	18 5 25.45	2.0856	18 42 1.1	0.928	19	19 44 57.47	2.0559	17 47 49.6	3.141
20	18 7 30.58	2.0853	18 42 54.3	0.844	20	19 47 0.80	2.0549	17 44 38.7	3.221
21	18 9 35.69	2.0851	18 43 42.3	0.757	21	19 49 4.06	2.0539	17 41 23.0	3.301
22	18 11 40.79	2.0848	18 44 25.1	0.670	22	19 51 7.27	2.0529	17 38 2.5	3.381
23	18 13 45.87	2.0844	S.18 45 2.7	0.583	23	19 53 10.42	2.0519	S.17 34 37.2	3.461
TUESDAY 18.					THURSDAY 20.				
0	18 15 50.92	2.0841	S.18 45 35.0	0.496	0	19 55 13.50	2.0499	S.17 31 7.1	3.541
1	18 17 55.95	2.0838	18 46 2.1	0.409	1	19 57 16.52	2.0490	17 27 32.2	3.621
2	18 20 0.97	2.0835	18 46 24.1	0.323	2	19 59 19.48	2.0480	17 23 52.6	3.700
3	18 22 5.97	2.0831	18 46 40.9	0.236	3	20 1 22.38	2.0470	17 20 8.2	3.779
4	18 24 10.94	2.0827	18 46 52.5	0.150	4	20 3 25.22	2.0460	17 16 19.1	3.858
5	18 26 15.89	2.0823	18 46 58.9	0.063	5	20 5 27.99	2.0457	17 12 25.3	3.936
6	18 28 20.81	2.0819	18 47 0.1	0.024	6	20 7 30.70	2.0446	17 8 26.8	4.014
7	18 30 25.71	2.0814	18 46 56.1	0.110	7	20 9 33.34	2.0435	17 4 23.6	4.091
8	18 32 30.58	2.0810	18 46 46.9	0.197	8	20 11 35.92	2.0424	17 0 15.8	4.169
9	18 34 35.43	2.0806	18 46 32.5	0.283	9	20 13 38.43	2.0413	16 56 3.4	4.246
10	18 36 40.25	2.0801	18 46 13.0	0.369	10	20 15 40.88	2.0402	16 51 46.3	4.323
11	18 38 45.04	2.0796	18 45 48.3	0.455	11	20 17 43.26	2.0391	16 47 24.6	4.399
12	18 40 49.80	2.0791	18 45 18.4	0.541	12	20 19 45.57	2.0380	16 42 58.4	4.475
13	18 42 54.53	2.0786	18 44 43.4	0.627	13	20 21 47.81	2.0368	16 38 27.7	4.550
14	18 44 59.22	2.0780	18 44 3.2	0.713	14	20 23 49.99	2.0357	16 33 52.4	4.625
15	18 47 3.88	2.0774	18 43 17.9	0.798	15	20 25 52.10	2.0346	16 29 12.6	4.701
16	18 49 8.51	2.0769	18 42 27.4	0.884	16	20 27 54.14	2.0335	16 24 28.3	4.776
17	18 51 13.11	2.0763	18 41 31.8	0.970	17	20 29 56.11	2.0323	16 19 39.5	4.850
18	18 53 17.67	2.0757	18 40 31.0	1.056	18	20 31 58.01	2.0311	16 14 46.3	4.924
19	18 55 22.19	2.0751	18 39 25.1	1.141	19	20 33 59.84	2.0299	16 9 48.7	4.997
20	18 57 26.68	2.0745	18 38 14.1	1.226	20	20 36 1.60	2.0286	16 4 46.6	5.070
21	18 59 31.12	2.0738	18 36 58.0	1.311	21	20 38 3.29	2.0275	15 59 40.2	5.143
22	19 1 35.53	2.0732	18 35 36.8	1.395	22	20 40 4.91	2.0264	15 54 29.4	5.216
23	19 3 39.91	2.0725	18 34 10.5	1.481	23	20 42 6.46	2.0252	15 49 14.3	5.288
24	19 5 44.24	2.0718	S.18 32 39.1	1.566	24	20 44 7.94	2.0241	S.15 43 54.8	5.360

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
FRIDAY 21.					SUNDAY 23.				
0	^h 20 ^m 44 ^s 7.94	9.9841	S. 15° 43' 54.8"	5.380	0	^h 22 ^m 19 ^s 58.97	1.9729	S. 10° 12' 18.3"	8.370
1	20 46 9.35	9.9839	15 38 31.0	5.481	1	22 21 57.32	1.9722	10 4 0.6	8.318
2	20 48 10.69	9.9817	15 33 3.0	5.502	2	22 23 55.63	1.9714	9 55 40.1	8.265
3	20 50 11.96	9.9806	15 27 30.8	5.573	3	22 25 53.89	1.9707	9 47 16.8	8.412
4	20 52 13.15	9.9194	15 21 54.8	5.643	4	22 27 52.11	1.9700	9 38 50.6	8.459
5	20 54 14.28	9.9189	15 16 13.6	5.713	5	22 29 50.29	1.9693	9 30 21.6	8.506
6	20 56 15.33	9.9170	15 10 28.7	5.782	6	22 31 48.42	1.9686	9 21 50.0	8.550
7	20 58 16.31	9.9168	15 4 39.7	5.861	7	22 33 46.51	1.9679	9 13 15.7	8.594
8	21 0 17.22	9.9146	14 58 46.6	5.930	8	22 35 44.57	1.9673	9 4 38.7	8.638
9	21 2 18.06	9.9134	14 52 49.4	5.998	9	22 37 42.59	1.9667	8 55 59.0	8.682
10	21 4 18.83	9.9122	14 46 48.1	6.066	10	22 39 40.57	1.9661	8 47 16.8	8.726
11	21 6 19.53	9.9110	14 40 42.8	6.133	11	22 41 38.52	1.9656	8 38 32.1	8.767
12	21 8 20.15	9.9099	14 34 33.4	6.199	12	22 43 36.44	1.9651	8 29 44.8	8.808
13	21 10 20.70	9.9087	14 28 20.0	6.266	13	22 45 34.33	1.9646	8 20 55.1	8.849
14	21 12 21.19	9.9075	14 22 2.7	6.332	14	22 47 32.19	1.9641	8 12 2.9	8.890
15	21 14 21.61	9.9063	14 15 41.5	6.397	15	22 49 30.02	1.9636	8 3 8.3	8.930
16	21 16 21.95	9.9051	14 9 16.3	6.462	16	22 51 27.82	1.9631	7 54 11.3	8.969
17	21 18 22.22	9.9040	14 2 47.2	6.517	17	22 53 25.60	1.9627	7 45 12.0	9.008
18	21 20 22.43	9.9030	13 56 14.3	6.561	18	22 55 23.35	1.9623	7 36 10.4	9.046
19	21 22 22.57	9.9018	13 49 37.6	6.644	19	22 57 21.08	1.9619	7 27 6.6	9.083
20	21 24 22.64	9.9006	13 42 57.0	6.707	20	22 59 18.78	1.9616	7 18 0.5	9.120
21	21 26 22.64	1.9994	13 36 12.7	6.770	21	23 1 16.47	1.9613	7 8 52.2	9.156
22	21 28 22.57	1.9983	13 29 24.6	6.833	22	23 3 14.14	1.9610	6 59 41.8	9.191
23	21 30 22.44	1.9970	S. 13° 22' 32.8"	6.894	23	23 5 11.79	1.9606	S. 6° 50' 29.3"	9.226
SATURDAY 22.					MONDAY 24.				
0	21 32 22.24	1.9961	S. 13° 15' 37.3"	6.960	0	23 7 9.43	1.9606	S. 6° 41' 14.7"	9.260
1	21 34 21.97	1.9950	13 8 38.1	7.016	1	23 9 7.06	1.9604	6 31 58.1	9.294
2	21 36 21.64	1.9939	13 1 35.3	7.076	2	23 11 4.68	1.9602	6 22 39.4	9.327
3	21 38 21.24	1.9928	12 54 28.9	7.136	3	23 13 2.29	1.9601	6 13 18.8	9.360
4	21 40 20.78	1.9918	12 47 19.0	7.195	4	23 14 59.89	1.9600	6 3 56.2	9.392
5	21 42 20.25	1.9907	12 40 5.5	7.264	5	23 16 57.48	1.9600	5 54 31.8	9.423
6	21 44 19.66	1.9896	12 32 48.5	7.312	6	23 18 55.07	1.9600	5 45 5.5	9.453
7	21 46 19.00	1.9886	12 25 28.1	7.369	7	23 20 52.66	1.9600	5 35 37.4	9.483
8	21 48 18.28	1.9876	12 18 4.2	7.427	8	23 22 50.25	1.9600	5 26 7.6	9.512
9	21 50 17.50	1.9866	12 10 36.9	7.484	9	23 24 47.84	1.9600	5 16 36.0	9.540
10	21 52 16.66	1.9856	12 3 6.2	7.540	10	23 26 45.43	1.9600	5 7 2.8	9.568
11	21 54 15.76	1.9845	11 55 32.1	7.596	11	23 28 43.03	1.9601	4 57 27.9	9.596
12	21 56 14.80	1.9836	11 47 54.7	7.651	12	23 30 40.64	1.9602	4 47 51.4	9.622
13	21 58 13.78	1.9826	11 40 14.0	7.706	13	23 32 38.25	1.9603	4 38 13.3	9.648
14	22 0 12.71	1.9816	11 32 30.1	7.760	14	23 34 35.88	1.9605	4 28 33.6	9.673
15	22 2 11.58	1.9807	11 24 42.9	7.813	15	23 36 33.52	1.9608	4 18 52.5	9.698
16	22 4 10.39	1.9797	11 16 52.5	7.866	16	23 38 31.18	1.9611	4 9 9.9	9.723
17	22 6 9.15	1.9788	11 8 58.9	7.919	17	23 40 28.86	1.9614	3 59 25.9	9.748
18	22 8 7.85	1.9779	11 1 2.2	7.971	18	23 42 26.55	1.9617	3 49 40.5	9.767
19	22 10 6.50	1.9770	10 53 2.4	8.023	19	23 44 24.26	1.9621	3 39 53.8	9.789
20	22 12 5.09	1.9761	10 44 59.6	8.073	20	23 46 22.00	1.9625	3 30 5.8	9.810
21	22 14 3.63	1.9753	10 36 53.7	8.123	21	23 48 19.76	1.9629	3 20 16.5	9.831
22	22 16 2.13	1.9745	10 28 44.9	8.173	22	23 50 17.55	1.9634	3 10 26.0	9.851
23	22 18 0.57	1.9737	10 20 33.1	8.223	23	23 52 15.37	1.9639	3 0 34.4	9.870
24	22 19 58.97	1.9729	S. 10° 12' 18.3"	8.270	24	23 54 13.22	1.9644	S. 2° 50' 41.6"	9.888

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
TUESDAY 25.					THURSDAY 27.				
0	^h 23 ^m 54 ^s 13.22	1.9644	S. 2° 50' 41.6"	9.888	0	^h 1 ^m 29 ^s 52.32	2.0846	N. 5° 11' 46.7"	9.928
1	23 56 11.10	1.9650	2 40 47.7	9.906	1	1 31 54.58	2.0890	5 21 41.9	9.910
2	23 58 9.02	1.9656	2 30 52.8	9.923	2	1 33 57.00	2.0416	5 31 35.9	9.891
3	0 0 6.98	1.9663	2 20 56.9	9.940	3	1 35 59.57	2.0442	5 41 28.8	9.873
4	0 2 4.98	1.9670	2 11 0.0	9.956	4	1 38 2.30	2.0468	5 51 20.5	9.851
5	0 4 3.02	1.9678	2 1 2.1	9.971	5	1 40 5.18	2.0494	6 1 11.0	9.830
6	0 6 1.11	1.9686	1 51 3.4	9.986	6	1 42 8.23	2.0521	6 11 0.1	9.807
7	0 7 59.25	1.9693	1 41 3.9	9.999	7	1 44 11.44	2.0548	6 20 47.8	9.784
8	0 9 57.43	1.9701	1 31 3.5	10.013	8	1 46 14.81	2.0576	6 30 34.2	9.760
9	0 11 55.66	1.9710	1 21 2.4	10.025	9	1 48 18.35	2.0606	6 40 19.2	9.736
10	0 13 53.95	1.9719	1 11 0.5	10.038	10	1 50 22.07	2.0634	6 50 2.6	9.711
11	0 15 52.30	1.9729	1 0 58.0	10.047	11	1 52 25.96	2.0663	6 59 44.5	9.686
12	0 17 50.70	1.9739	0 50 54.9	10.057	12	1 54 30.03	2.0692	7 9 24.8	9.667
13	0 19 49.16	1.9749	0 40 51.2	10.067	13	1 56 34.27	2.0722	7 19 3.4	9.629
14	0 21 47.69	1.9760	0 30 46.9	10.076	14	1 58 38.70	2.0752	7 28 40.3	9.600
15	0 23 46.28	1.9771	0 20 42.1	10.084	15	2 0 43.31	2.0783	7 38 15.4	9.571
16	0 25 44.94	1.9783	0 10 36.9	10.091	16	2 2 48.10	2.0814	7 47 48.8	9.540
17	0 27 43.67	1.9795	S. 0 0 31.2	10.098	17	2 4 53.09	2.0846	7 57 20.3	9.509
18	0 29 42.48	1.9807	N. 0 9 34.8	10.103	18	2 6 58.26	2.0878	8 6 49.9	9.477
19	0 31 41.36	1.9819	0 19 41.2	10.108	19	2 9 3.62	2.0910	8 16 17.6	9.444
20	0 33 40.31	1.9832	0 29 47.8	10.113	20	2 11 9.18	2.0943	8 25 43.2	9.410
21	0 35 39.34	1.9846	0 39 54.6	10.116	21	2 13 14.94	2.0976	8 35 6.8	9.376
22	0 37 38.46	1.9860	0 50 1.7	10.119	22	2 15 20.89	2.1009	8 44 28.2	9.339
23	0 39 37.66	1.9874	N. 1 0 8.9	10.123	23	2 17 27.05	2.1043	N. 8 53 47.4	9.302
WEDNESDAY 26.					FRIDAY 28.				
0	0 41 36.95	1.9888	N. 1 10 16.3	10.123	0	2 19 33.41	2.1077	N. 9 3 4.4	9.264
1	0 43 36.32	1.9903	1 20 23.7	10.123	1	2 21 39.98	2.1113	9 12 19.1	9.226
2	0 45 35.79	1.9919	1 30 31.1	10.123	2	2 23 46.75	2.1147	9 21 31.5	9.187
3	0 47 35.35	1.9935	1 40 38.5	10.123	3	2 25 53.74	2.1183	9 30 41.5	9.147
4	0 49 35.01	1.9951	1 50 45.8	10.121	4	2 28 0.94	2.1218	9 39 49.1	9.105
5	0 51 34.77	1.9968	2 0 53.0	10.119	5	2 30 8.36	2.1254	9 48 54.2	9.063
6	0 53 34.63	1.9985	2 11 0.1	10.116	6	2 32 15.99	2.1290	9 57 56.7	9.020
7	0 55 34.60	2.0003	2 21 6.9	10.112	7	2 34 23.84	2.1327	10 6 56.6	8.976
8	0 57 34.67	2.0021	2 31 13.5	10.107	8	2 36 31.91	2.1364	10 15 53.9	8.931
9	0 59 34.85	2.0039	2 41 19.8	10.102	9	2 38 40.20	2.1401	10 24 48.4	8.886
10	1 1 35.14	2.0068	2 51 25.7	10.096	10	2 40 48.72	2.1439	10 33 40.2	8.839
11	1 3 35.55	2.0078	3 1 31.3	10.089	11	2 42 57.47	2.1477	10 42 29.1	8.792
12	1 5 36.07	2.0097	3 11 36.4	10.081	12	2 45 6.44	2.1515	10 51 15.2	8.743
13	1 7 36.71	2.0117	3 21 41.1	10.073	13	2 47 15.64	2.1553	10 59 58.4	8.694
14	1 9 37.47	2.0137	3 31 45.2	10.063	14	2 49 25.08	2.1592	11 8 38.5	8.644
15	1 11 38.36	2.0158	3 41 48.7	10.063	15	2 51 34.75	2.1631	11 17 15.6	8.593
16	1 13 39.37	2.0180	3 51 51.6	10.042	16	2 53 44.66	2.1671	11 25 49.6	8.540
17	1 15 40.51	2.0203	4 1 53.8	10.031	17	2 55 54.81	2.1711	11 34 20.4	8.487
18	1 17 41.79	2.0224	4 11 55.3	10.019	18	2 58 5.19	2.1751	11 42 48.0	8.433
19	1 19 43.20	2.0246	4 21 56.1	10.006	19	3 0 15.81	2.1791	11 51 12.4	8.378
20	1 21 44.74	2.0269	4 31 56.0	9.992	20	3 2 26.68	2.1832	11 59 33.4	8.322
21	1 23 46.42	2.0292	4 41 55.1	9.978	21	3 4 37.79	2.1873	12 7 51.0	8.265
22	1 25 48.24	2.0316	4 51 53.3	9.963	22	3 6 49.15	2.1914	12 16 5.2	8.207
23	1 27 50.21	2.0340	5 1 50.5	9.945	23	3 9 0.76	2.1956	12 24 15.9	8.149
24	1 29 52.32	2.0365	N. 5 11 46.7	9.928	24	3 11 12.61	2.1998	N. 12 32 23.1	8.089

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SATURDAY 29.					SUNDAY, MARCH 1.				
0	3 11 12.61	2.1906	N.12° 32' 23.1"	8.089	0	4 5 14.71	2.3045	N.15° 26' 57.8"	6.366
1	3 13 24.71	2.3038	12 40 26.6	8.028	PHASES OF THE MOON.				
2	3 15 37.07	2.3080	12 48 26.5	7.986					
3	3 17 49.68	2.3122	12 56 22.7	7.904	☾ First Quarter, ^{d h m} ○ Full Moon, 7 21 35.4 ☾ Last Quarter, 14 21 16.7 ● New Moon, 23 2 20.6				
4	3 20 2.54	2.3165	13 4 15.0	7.840					
5	3 22 15.66	2.2908	13 12 3.5	7.776	☾ Perigee, ^{d h m} ☾ Apogee, 19 15.5				
6	3 24 29.04	2.2351	13 19 48.1	7.710					
7	3 26 42.68	2.2294	13 27 28.8	7.644					
8	3 28 56.57	2.2337	13 35 5.4	7.578					
9	3 31 10.72	2.2381	13 42 38.0	7.508					
10	3 33 25.14	2.2424	13 50 6.4	7.438					
11	3 35 39.81	2.2468	13 57 30.6	7.368					
12	3 37 54.75	2.2512	14 4 50.6	7.297					
13	3 40 9.95	2.2556	14 12 6.3	7.226					
14	3 42 25.42	2.2600	14 19 17.6	7.162					
15	3 44 41.15	2.2643	14 26 24.5	7.078					
16	3 46 57.14	2.2687	14 33 26.9	7.002					
17	3 49 13.40	2.2732	14 40 24.7	6.936					
18	3 51 29.93	2.2777	14 47 18.0	6.849					
19	3 53 46.72	2.2821	14 54 6.6	6.771					
20	3 56 3.78	2.2866	15 0 50.5	6.692					
21	3 58 21.11	2.2911	15 7 29.6	6.612					
22	4 0 38.71	2.2955	15 14 3.9	6.531					
23	4 2 56.58	2.3000	15 20 33.3	6.449					
24	4 5 14.71	2.3045	N.15° 26' 57.8"	6.366					

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Dist.	IIIh.	P. L. of Dist.	VIh.	P. L. of Dist.	IXh.	P. L. of Dist.
1	SUN W.	86° 48' 2"	2927	88° 19' 47"	2900	89° 51' 54"	2892	91° 24' 23"	2875
	Fomalhaut W.	66 38 48	2946	68 10 10	2920	69 42 3	2897	71 14 25	2878
	Venus W.	55 55 59	2992	57 26 13	2992	58 56 48	2966	60 27 44	2947
	α Pegasi W.	52 14 21	3058	53 43 22	3022	55 13 7	2990	56 43 34	2937
	Pollux E.	73 23 41	2866	71 46 2	2843	70 8 5	2828	68 29 48	2814
	Regulus E.	109 12 50	2879	107 33 26	2864	105 53 42	2848	104 13 36	2833
2	SUN W.	99 12 23	2787	100 47 8	2789	102 22 17	2761	103 57 49	2732
	Fomalhaut W.	79 3 22	2769	80 38 31	2749	82 14 6	2739	83 50 7	2711
	Venus W.	68 8 5	2867	69 41 19	2839	71 14 56	2821	72 48 57	2802
	α Pegasi W.	64 25 33	2811	65 59 46	2785	67 34 34	2760	69 9 54	2736
	Pollux E.	60 13 41	2845	58 33 31	2823	56 53 4	2800	55 12 18	2808
	Regulus E.	95 47 30	2460	94 5 8	2434	92 22 22	2417	90 39 12	2401
3	SUN W.	112 1 33	2643	113 39 30	2625	115 17 51	2607	116 56 37	2590
	Fomalhaut W.	91 56 11	2626	93 34 32	2610	95 13 13	2595	96 52 14	2581
	Venus W.	80 45 3	2710	82 21 29	2692	83 58 19	2675	85 35 33	2657
	α Pegasi W.	77 14 24	2624	78 52 46	2604	80 31 36	2586	82 10 52	2568
	α Arietis W.	33 48 31	2789	35 23 13	2733	36 59 9	2683	38 36 12	2636
	Pollux E.	46 44 30	2485	45 2 14	2448	43 19 48	2441	41 37 12	2436
4	Regulus E.	81 57 24	2818	80 11 51	2801	78 25 53	2786	76 39 31	2768
	SUN W.	125 16 18	2506	126 57 23	2490	128 38 51	2474	130 20 40	2459
	Fomalhaut W.	105 11 47	2525	106 52 26	2516	108 33 17	2510	110 14 17	2503
	Venus W.	93 47 40	2571	95 27 15	2554	97 7 13	2539	98 47 32	2523
	α Pegasi W.	90 33 23	2483	92 15 0	2469	93 56 57	2455	95 39 13	2443
	α Arietis W.	46 55 37	2465	48 37 54	2435	50 20 53	2398	52 4 31	2373
5	Aldebaran W.	12 26 54	2190	14 15 37	2175	16 4 42	2161	17 54 9	2146
	Pollux E.	33 3 31	2448	31 21 5	2409	29 38 59	2392	27 57 20	2369
	Regulus E.	67 41 46	2190	65 53 4	2175	64 3 59	2161	62 14 33	2147
	Spica E.	121 11 20	2220	119 23 22	2204	117 35 1	2188	115 46 16	2174
	Venus W.	107 14 19	2453	108 56 39	2441	110 39 16	2429	112 22 10	2417
	α Pegasi W.	104 14 22	2398	105 57 59	2392	107 41 45	2380	109 25 36	2368
6	α Arietis W.	60 51 14	2266	62 38 4	2249	64 25 19	2232	66 12 59	2216
	Aldebaran W.	27 6 37	2082	28 58 4	2070	30 49 49	2059	32 41 51	2049
	Regulus E.	53 2 13	2083	51 10 47	2072	49 19 4	2061	47 27 5	2050
	Spica E.	106 37 9	2106	104 46 19	2084	102 55 11	2068	101 3 46	2073
	Venus W.	118 5 0	2389	119 48 36	2408	121 31 59	2419	123 15 7	2433
	α Arietis W.	75 16 28	2157	77 6 0	2148	78 55 46	2141	80 45 42	2134
7	Aldebaran W.	42 5 41	2007	43 59 4	2000	45 52 38	1995	47 46 20	1990
	Regulus E.	38 3 28	2009	36 10 8	2003	34 16 38	1998	32 23 0	1993
	Spica E.	91 42 57	2030	89 50 10	2023	87 57 12	2017	86 4 5	2013
	Saturn E.	134 26 8	2028	132 33 33	2031	130 40 47	2026	128 47 51	2019
	α Arietis W.	89 57 23	2118	91 47 55	2118	93 38 27	2119	95 28 57	2121
	Aldebaran W.	57 16 27	1977	59 10 38	1976	61 4 50	1976	62 59 2	1977
8	Spica E.	76 37 4	2001	74 43 31	2001	72 49 58	2001	70 56 26	2003
	Saturn E.	119 21 21	2002	117 27 50	2002	115 34 19	2001	113 40 47	2003
	Antares E.	122 12 26	2064	120 20 32	2061	118 28 32	2059	116 36 28	2057
	α Arietis W.	104 40 8	2148	106 29 54	2157	108 19 26	2167	110 8 43	2178
	Aldebaran W.	72 29 8	1995	74 22 50	2001	76 16 22	2007	78 9 44	2015
	Pollux W.	30 6 16	2274	31 52 54	2252	33 40 4	2236	35 27 40	2222

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of DIST.	XVh.	P. L. of DIST.	XVIIIh.	P. L. of DIST.	XXIh.	P. L. of DIST.
1	SUN W.	92° 57' 14"	2668	94° 30' 27"	2641	96° 4' 2"	2623	97° 38' 1"	2606
	Fomalhaut W.	72° 47' 17"	2653	74° 20' 36"	2631	75° 54' 24"	2609	77° 28' 40"	2589
	Venus W.	61° 59' 3"	2630	63° 30' 44"	2613	65° 2' 48"	2604	66° 35' 15"	2576
	α Pegasi W.	58° 14' 41"	2626	59° 46' 28"	2605	61° 18' 53"	2606	62° 51' 55"	2588
	Pollux E.	66° 51' 12"	2600	65° 12' 18"	2606	63° 33' 4"	2673	61° 53' 32"	2669
	Regulus E.	102° 33' 8"	2617	100° 52' 18"	2600	99° 11' 5"	2484	97° 29' 29"	2467
2	SUN W.	105° 33' 46"	2716	107° 10' 6"	2696	108° 46' 51"	2678	110° 24' 0"	2660
	Fomalhaut W.	85° 26' 32"	2692	87° 3' 22"	2675	88° 40' 35"	2657	90° 18' 12"	2641
	Venus W.	74° 23' 22"	2784	75° 58' 11"	2766	77° 33' 24"	2747	79° 9' 1"	2729
	α Pegasi W.	70° 45' 46"	2711	72° 22' 11"	2689	73° 59' 5"	2666	75° 36' 30"	2646
	Pollux E.	53° 31' 16"	2486	51° 49' 57"	2466	50° 8' 23"	2474	48° 26' 33"	2466
	Regulus E.	88° 55' 39"	2384	87° 11' 41"	2368	85° 27' 20"	2360	83° 42' 34"	2334
3	SUN W.	118° 35' 46"	2672	120° 15' 19"	2666	121° 55' 15"	2638	123° 35' 35"	2622
	Fomalhaut W.	96° 31' 35"	2668	100° 11' 14"	2666	101° 51' 10"	2645	103° 31' 21"	2634
	Venus W.	87° 13' 11"	2630	88° 51' 13"	2621	90° 29' 39"	2604	92° 8' 28"	2588
	α Pegasi W.	83° 50' 34"	2647	85° 30' 42"	2660	87° 11' 13"	2614	88° 52' 7"	2498
	α Arietis W.	40° 14' 18"	2694	41° 53' 21"	2666	43° 33' 17"	2630	45° 14' 3"	2465
	Pollux E.	39° 54' 29"	2434	38° 11' 43"	2433	36° 28' 56"	2434	34° 46' 10"	2428
4	Regulus E.	74° 52' 45"	2362	73° 5' 35"	2367	71° 18' 2"	2231	69° 30' 6"	2206
	SUN W.	132° 2' 51"	2446	133° 45' 22"	2430	135° 28' 14"	2417	137° 11' 25"	2403
	Fomalhaut W.	111° 55' 26"	2426	113° 36' 41"	2406	115° 18' 0"	2404	116° 59' 21"	2406
	Venus W.	100° 28' 13"	2369	102° 9' 14"	2404	103° 50' 36"	2400	105° 32' 18"	2406
	α Pegasi W.	97° 21' 46"	2423	99° 4' 34"	2422	100° 47' 38"	2413	102° 30' 54"	2406
	α Arietis W.	53° 48' 46"	2346	55° 33' 35"	2326	57° 18' 57"	2304	59° 4' 51"	2284
5	Aldebaran W.	19° 43' 58"	2132	21° 34' 8"	2119	23° 24' 38"	2106	25° 15' 28"	2094
	Pollux E.	26° 16' 19"	2646	24° 36' 9"	2666	22° 57' 7"	2660	21° 19' 33"	2747
	Regulus E.	60° 24' 46"	2123	58° 34' 37"	2120	56° 44' 8"	2107	54° 53' 20"	2094
	Spica E.	113° 57' 9"	2160	112° 7' 40"	2146	110° 17' 50"	2132	108° 27' 39"	2119
	Venus W.	114° 5' 20"	2407	115° 48' 45"	2367	117° 32' 24"	2366	119° 16' 16"	2360
	α Pegasi W.	111° 9' 31"	2365	112° 53' 27"	2366	114° 37' 22"	2366	116° 21' 14"	2362
6	α Arietis W.	68° 1' 3"	2362	69° 49' 27"	2190	71° 38' 10"	2178	73° 27' 11"	2167
	Aldebaran W.	34° 34' 9"	2039	36° 26' 42"	2031	38° 19' 28"	2021	40° 12' 29"	2014
	Regulus E.	45° 34' 49"	2041	43° 42' 19"	2032	41° 49' 34"	2024	39° 56' 37"	2016
	Spica E.	99° 12' 5"	2063	97° 20' 9"	2063	95° 27' 58"	2045	93° 35' 34"	2037
	α Pegasi W.	124° 57' 55"	2460	126° 40' 19"	2470	128° 22' 15"	2494	130° 3' 37"	2621
	α Arietis W.	82° 35' 49"	2129	84° 26' 4"	2124	86° 16' 26"	2121	88° 6' 53"	2119
7	Aldebaran W.	49° 40' 10"	1966	51° 34' 7"	1963	53° 28' 10"	1979	55° 22' 17"	1977
	Regulus E.	30° 29' 14"	1969	28° 35' 22"	1966	26° 41' 26"	1964	24° 47' 26"	1962
	Spica E.	84° 10' 51"	2009	82° 17' 31"	2006	80° 24' 5"	2003	78° 30' 36"	2001
	Saturn E.	126° 54' 46"	2014	125° 1' 33"	2010	123° 8' 14"	2006	121° 14' 49"	2004
	α Arietis W.	97° 19' 24"	2124	99° 9' 47"	2128	101° 0' 3"	2134	102° 50' 10"	2140
	Aldebaran W.	64° 53' 12"	1979	66° 47' 19"	1982	68° 41' 21"	1986	70° 35' 18"	1990
8	Spica E.	69° 2' 57"	2007	67° 9' 33"	2010	65° 16' 14"	2014	63° 23' 2"	2019
	Saturn E.	111° 47' 17"	2006	109° 53' 50"	2007	108° 0' 26"	2010	106° 7' 8"	2014
	Antares E.	114° 44' 22"	2056	112° 52' 15"	2067	111° 0' 9"	2060	109° 8' 6"	2061
	α Arietis W.	111° 57' 43"	2191	113° 46' 24"	2206	115° 34' 44"	2220	117° 22' 42"	2227
	Aldebaran W.	80° 2' 55"	2023	81° 55' 53"	2033	83° 48' 38"	2042	85° 41' 7"	2052
	Pollux W.	37° 15' 35"	2212	39° 3' 44"	2207	40° 52' 1"	2204	42° 40' 22"	2203

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
8	Spica E.	61° 29' 58"	2025	59° 37' 3"	2033	57° 44' 20"	2041	55° 51' 49"	2050
	Saturn E.	104 13 56	2019	102 20 52	2025	100 27 57	2032	98 35 12	2039
	Antares E.	107 16 7	2065	105 24 14	2070	103 32 28	2076	101 40 50	2082
9	Aldebaran W.	87 33 20	2092	89 25 17	2074	91 16 56	2098	93 8 16	2099
	Pollux W.	44 28 45	2204	46 17 6	2207	48 5 23	2212	49 53 33	2218
	Spica E.	46 33 11	2108	44 42 24	2123	42 52 0	2138	41 1 59	2155
	Saturn E.	89 14 39	2086	87 23 19	2098	85 32 16	2110	83 41 32	2123
	Antares E.	92 25 39	2127	90 35 21	2139	88 45 21	2151	86 55 39	2164
	α Aquilæ E.	135 8 23	2107	133 40 22	2065	132 11 17	2010	130 41 17	2073
10	Aldebaran W.	102 19 45	2171	104 8 56	2187	105 57 43	2204	107 46 5	2220
	Pollux W.	58 51 28	2267	60 38 16	2279	62 24 47	2293	64 10 57	2307
	Regulus W.	22 12 58	2176	24 2 1	2192	25 50 41	2208	27 38 57	2224
	Spica E.	31 58 55	2260	30 11 56	2286	28 25 35	2312	26 39 55	2346
	Saturn E.	74 33 4	2195	72 44 29	2212	70 56 19	2228	69 8 33	2245
	Antares E.	77 52 25	2239	76 4 55	2256	74 17 51	2274	72 31 13	2291
	α Aquilæ E.	123 1 46	2362	121 28 38	2361	119 55 16	2344	118 21 45	2328
11	Aldebaran W.	116 41 33	2309	118 27 19	2327	120 12 39	2346	121 57 31	2365
	Pollux W.	72 56 25	2386	74 40 20	2403	76 23 51	2421	78 6 56	2438
	Regulus W.	36 34 4	2311	38 19 47	2330	40 5 3	2348	41 49 53	2367
	Saturn E.	60 16 11	2335	58 31 3	2354	56 46 22	2372	55 2 9	2392
	Antares E.	63 44 55	2361	62 1 7	2412	60 17 49	2433	58 35 1	2456
	α Aquilæ E.	110 33 36	2348	109 0 10	2365	107 26 54	2364	105 53 49	2373
	SUN E.	137 30 32	2333	135 52 22	2353	134 14 39	2372	132 37 23	2392
12	Pollux W.	86 35 57	2382	88 16 26	2351	89 56 29	2370	91 36 5	2389
	Regulus W.	50 27 13	2462	52 9 20	2492	53 50 59	2506	55 32 12	2520
	Saturn E.	46 28 1	2492	44 46 36	2511	43 5 38	2522	41 25 9	2533
	Antares E.	50 9 7	2574	48 29 36	2599	46 50 40	2628	45 12 19	2652
	α Aquilæ E.	98 12 2	2940	96 40 34	2956	95 9 26	2972	93 38 38	2990
	SUN E.	124 37 48	2796	123 3 15	2816	121 29 8	2837	119 55 28	2856
13	Pollux W.	99 47 31	2686	101 24 30	2705	103 1 3	2724	104 37 11	2744
	Regulus W.	63 51 40	2614	65 30 16	2632	67 8 27	2650	68 46 14	2668
	Saturn E.	33 9 46	2655	31 32 6	2676	29 54 53	2697	28 18 9	2718
	Antares E.	37 9 59	2801	35 35 32	2825	34 1 50	2871	32 28 54	2909
	α Aquilæ E.	86 10 22	3096	84 41 55	3107	83 13 54	3129	81 46 19	3150
	SUN E.	112 13 45	2959	110 42 41	2979	109 12 2	2999	107 41 48	3018
14	Pollux W.	112 31 36	2827	114 5 16	2856	115 38 32	2872	117 11 25	2891
	Regulus W.	76 49 15	2753	78 24 44	2769	79 59 52	2785	81 34 39	2801
	Spica W.	23 50 26	2891	25 22 56	2891	26 55 28	2894	28 27 55	2898
	α Aquilæ E.	74 35 7	3267	73 10 17	3291	71 45 55	3318	70 22 4	3344
	SUN E.	100 16 28	3111	98 48 32	3128	97 20 56	3145	95 53 41	3162
15	Regulus W.	89 23 40	2873	90 56 34	2887	92 29 10	2899	94 1 30	2911
	Spica W.	36 8 9	2927	37 39 41	2946	39 11 2	2964	40 42 12	2983
	α Aquilæ E.	63 30 30	3485	62 9 49	3515	60 49 42	3548	59 30 11	3581
	SUN E.	88 42 20	3240	87 16 58	3264	85 51 53	3299	84 27 5	3281
16	Regulus W.	101 39 28	2966	103 10 23	2976	104 41 6	2985	106 11 37	2994
	Spica W.	48 15 16	3006	49 45 21	3015	51 15 15	3022	52 45 1	3030
	α Aquilæ E.	53 2 6	3771	51 46 34	3816	50 31 48	3862	49 17 50	3913

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Dist.	XVh.	P. L. of Dist.	XVIIIh.	P. L. of Dist.	XXh.	P. L. of Dist.
8	Spica	E.	53° 59' 33"	2059	52° 7' 31"	2070	50° 15' 46"	2082	48° 24' 19"	2084
	Saturn	E.	96 42 38	2047	94 50 17	2055	92 58 9	2065	91 6 16	2075
	Antares	E.	99 49 23	2069	97 58 7	2097	96 7 3	2107	94 16 14	2116
9	Aldebaran	W.	94 59 16	2115	96 49 56	2126	98 40 15	2141	100 30 11	2156
	Pollux	W.	51 41 33	2225	53 29 23	2234	55 17 0	2244	57 4 22	2255
	Spica	E.	39 12 24	2173	37 23 16	2193	35 34 37	2214	33 46 30	2235
	Saturn	E.	81 51 8	2136	80 1 4	2151	78 11 22	2165	76 22 1	2180
	Antares	E.	85 6 17	2192	83 17 15	2192	81 28 35	2207	79 40 18	2223
	α Aquilæ	E.	129 10 31	2241	127 39 4	2215	126 7 4	2223	124 34 36	2276
10	Aldebaran	W.	109 34 2	2227	111 21 34	2255	113 8 40	2272	114 55 20	2291
	Pollux	W.	65 56 47	2321	67 42 16	2327	69 27 22	2353	71 12 5	2368
	Regulus	W.	29 26 49	2241	31 14 16	2258	33 1 18	2275	34 47 54	2293
	Spica	E.	24 55 1	2281	23 10 59	2421	21 27 54	2467	19 45 54	2521
	Saturn	E.	67 21 13	2292	65 34 18	2290	63 47 49	2298	62 1 47	2316
	Antares	E.	70 45 1	2311	68 59 17	2320	67 14 1	2349	65 29 13	2370
	α Aquilæ	E.	116 48 7	2357	115 14 27	2327	113 40 47	2338	112 7 9	2342
11	Aldebaran	W.	123 41 56	2324	125 25 54	2408	127 9 24	2422	128 52 27	2441
	Pollux	W.	79 49 37	2427	81 31 51	2475	83 13 39	2494	84 55 1	2512
	Regulus	W.	43 34 15	2386	45 18 11	2406	47 1 39	2424	48 44 39	2443
	Saturn	E.	53 18 23	2412	51 35 6	2431	49 52 16	2451	48 9 54	2472
	Antares	E.	56 52 46	2478	55 11 2	2501	53 29 50	2525	51 49 12	2549
	α Aquilæ	E.	104 20 56	2525	102 48 18	2569	101 15 56	25910	99 43 50	25924
	SUN	E.	131 0 33	2713	129 24 11	2734	127 48 16	2755	126 12 49	2775
12	Pollux	W.	93 15 15	2609	94 53 58	2628	96 32 15	2647	98 10 6	2666
	Regulus	W.	57 12 58	2639	58 53 17	2658	60 33 10	2676	62 12 38	2695
	Saturn	E.	39 45 9	2672	38 5 36	2693	36 26 31	2614	34 47 55	2634
	Antares	E.	43 34 34	2690	41 57 27	2708	40 20 58	2728	38 45 8	2769
	α Aquilæ	E.	92 8 13	2608	90 38 10	2628	89 8 30	2648	87 39 14	2665
	SUN	E.	118 22 15	2679	116 49 29	2698	115 17 8	2719	113 45 14	2739
13	Pollux	W.	106 12 53	2763	107 48 10	2781	109 23 3	2799	110 57 32	2818
	Regulus	W.	70 23 37	2686	72 0 36	2703	73 37 12	2721	75 13 24	2737
	Saturn	E.	26 41 53	2740	25 6 6	2763	23 30 49	2785	21 56 2	2809
	Antares	E.	30 56 47	2951	29 25 33	2997	27 55 16	3047	26 26 2	3103
	α Aquilæ	E.	80 19 10	3173	78 52 28	3195	77 26 13	3219	76 0 26	3242
	SUN	E.	106 11 58	3037	104 42 31	3056	103 13 27	3075	101 44 47	3092
14	Pollux	W.	118 43 56	2909	120 16 3	2927	121 47 47	2944	123 19 10	2962
	Regulus	W.	83 9 5	2816	84 43 12	2831	86 17 0	2845	87 50 29	2859
	Spica	W.	30 0 16	2905	31 32 29	2912	33 4 32	2920	34 36 26	2928
	α Aquilæ	E.	68 58 43	3270	67 35 52	3288	66 13 33	3295	64 51 45	3264
	SUN	E.	94 26 47	3178	93 0 12	3194	91 33 56	3210	90 7 59	3225
15	Regulus	W.	95 33 35	2922	97 5 25	2935	98 37 0	2946	100 8 21	2957
	Spica	W.	42 13 11	2973	43 43 58	2981	45 14 35	2989	46 45 1	2998
	α Aquilæ	E.	58 11 16	3216	56 52 59	3251	55 35 20	3290	54 18 22	3229
	SUN	E.	83 2 31	3226	81 38 14	3207	80 14 10	3219	78 50 21	3231
16	Regulus	W.	107 41 57	3003	109 12 6	3011	110 42 5	3018	112 11 55	3026
	Spica	W.	54 14 37	3037	55 44 4	3043	57 13 23	3050	58 42 34	3056
	α Aquilæ	E.	48 4 43	3265	46 52 29	3222	45 41 11	3233	44 30 53	3240

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Dist.	IIIh.	P. L. of Dist.	VIh.	P. L. of Dist.	IXh.	P. L. of Dist.
16	SUN E.	77° 26' 45"	3341	76° 3' 21"	3362	74° 40' 10"	3363	73° 17' 11"	3372
17	Regulus W.	113 41 36	3032	115 11 9	3030	116 40 34	3044	118 9 52	3050
	Spica W.	60 11 38	3061	61 40 35	3067	63 9 25	3072	64 38 9	3077
	Saturn W.	16 57 32	3197	18 25 9	3122	19 52 52	3119	21 20 38	3116
	Antares W.	16 54 19	3076	18 8 3	3759	19 23 48	3664	20 41 13	3590
	α Aquilæ E.	43 21 39	4220	42 13 32	4298	41 6 38	4398	40 1 1	4474
	SUN E.	66 24 47	3413	65 2 45	3430	63 40 51	3436	62 19 4	3431
18	Spica W.	72 0 30	3095	73 28 46	3097	74 56 59	3100	76 25 9	3101
	Saturn W.	28 39 52	3115	30 7 43	3115	31 35 34	3116	33 3 25	3116
	Antares W.	27 24 19	3376	28 47 3	3361	30 10 15	3391	31 33 51	3312
	SUN E.	55 31 37	3454	54 10 22	3466	52 49 11	3461	51 28 3	3463
19	Spica W.	83 45 32	3106	85 13 35	3106	86 41 37	3106	88 9 39	3106
	Saturn W.	40 22 36	3114	41 50 28	3114	43 18 21	3112	44 46 16	3111
	Antares W.	38 36 28	3247	40 1 42	3237	41 27 7	3226	42 52 43	3220
	SUN E.	44 42 52	3469	43 21 53	3469	42 0 54	3469	40 39 55	3466
20	Spica W.	95 30 9	3098	96 58 21	3096	98 26 35	3094	99 54 52	3091
	Saturn W.	52 6 19	3101	53 34 28	3098	55 2 40	3098	56 30 56	3092
	Antares W.	50 3 2	3183	51 29 31	3177	52 56 8	3170	54 22 53	3164
	SUN E.	33 54 41	3460	32 33 32	3467	31 12 20	3456	29 51 6	3452
21	Spica W.	107 17 7	3076	108 45 46	3072	110 14 29	3069	111 43 17	3065
	Saturn W.	63 53 18	3073	65 22 1	3069	66 50 49	3065	68 19 42	3060
	Antares W.	61 38 30	3133	63 6 0	3127	64 33 37	3120	66 1 22	3114
	SUN E.	23 3 55	3433	21 42 16	3429	20 20 32	3424	18 58 43	3419
25	SUN W.	21 25 29	3222	22 51 12	3214	24 17 5	3206	25 43 8	3197
	Aldebaran E.	70 18 9	2669	68 44 56	2660	67 11 33	2642	65 38 0	2636
	Pollux E.	113 55 39	2941	112 24 12	2932	110 52 34	2928	109 20 44	2913
26	SUN W.	32 55 54	3163	34 22 59	3144	35 50 15	3136	37 17 42	3126
	Aldebaran E.	57 47 42	2796	56 13 7	2787	54 38 22	2778	53 3 25	2769
	Pollux E.	101 38 38	2968	100 5 36	2959	98 32 27	2946	96 59 4	2941
27	SUN W.	44 37 46	3078	46 6 23	3068	47 35 11	3068	49 4 12	3047
	α Pegasi W.	38 26 34	3568	39 45 54	3494	41 6 25	3486	42 28 1	3383
	Aldebaran E.	45 5 51	2725	43 29 45	2716	41 53 26	2707	40 16 56	2696
	Pollux E.	89 9 14	2796	87 34 41	2787	85 59 56	2778	84 24 59	2769
	Regulus E.	125 13 50	2727	123 37 46	2717	122 1 29	2708	120 25 0	2696
28	SUN W.	56 32 29	2996	58 2 48	2983	59 33 22	2973	61 4 9	2962
	α Pegasi W.	49 29 44	3173	50 56 26	3139	52 23 48	3108	53 51 50	3077
	Venus W.	20 25 34	3114	21 53 27	3096	23 21 41	3061	24 50 14	3055
	Aldebaran E.	32 11 10	2649	30 33 21	2638	28 55 18	2628	27 17 1	2618
	Pollux E.	76 27 18	2724	74 51 10	2715	73 14 50	2706	71 38 18	2697
	Regulus E.	112 19 21	2649	110 41 33	2639	109 3 31	2629	107 25 16	2618
29	SUN W.	68 41 42	2903	70 13 57	2901	71 46 28	2878	73 19 15	2866
	α Pegasi W.	61 20 34	2947	62 51 53	2926	64 23 40	2904	65 55 54	2883
	Venus W.	32 17 32	2993	33 47 53	2980	35 18 31	2966	36 49 26	2953
	Pollux E.	63 32 40	2653	61 54 57	2645	60 17 3	2637	58 38 58	2629
	Regulus E.	99 10 20	2664	97 30 36	2653	95 50 37	2642	94 10 22	2630

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of DIST.	XVh.	P. L. of DIST.	XVIIIh.	P. L. of DIST.	XXIh.	P. L. of DIST.
16	SUN E.	71° 54' 22"	3381	70° 31' 44"	3390	69° 9' 16"	3398	67° 46' 57"	3406
17	Regulus W.	119 39 3	3055	121 8 8	3060	122 37 7	3064	124 6 1	3067
	Spica W.	66 6 47	3092	67 35 19	3095	69 3 47	3098	70 32 11	3099
	Saturn W.	22 48 28	3116	24 16 18	3114	25 44 10	3115	27 12 1	3115
	Antares W.	21 59 58	3229	23 19 50	3430	24 40 37	3439	26 2 9	3406
	α Aquilæ E.	38 56 46	4677	37 54 1	4689	36 52 52	4611	35 53 25	4949
	SUN E.	60 57 23	3437	59 35 49	3443	58 14 20	3447	56 52 57	3450
18	Spica W.	77 53 17	3104	79 21 22	3104	80 49 27	3103	82 17 30	3106
	Saturn W.	34 31 15	3116	35 59 5	3115	37 26 55	3116	38 54 45	3115
	Antares W.	32 57 49	3295	34 22 6	3282	35 46 39	3269	37 11 27	3258
	SUN E.	50 6 57	3455	48 45 54	3466	47 24 52	3467	46 3 51	3469
19	Spica W.	89 37 43	3105	91 5 47	3103	92 33 53	3102	94 2 0	3101
	Saturn W.	46 14 12	3110	47 42 10	3108	49 10 10	3106	50 38 13	3103
	Antares W.	44 18 29	3212	45 44 24	3204	47 10 28	3197	48 36 41	3190
	SUN E.	39 18 55	3467	37 57 54	3465	36 36 51	3464	35 15 47	3463
20	Spica W.	101 23 12	3089	102 51 35	3086	104 20 2	3082	105 48 33	3080
	Saturn W.	57 59 15	3098	59 27 39	3095	60 56 7	3091	62 24 40	3077
	Antares W.	55 49 45	3168	57 16 45	3151	58 43 53	3145	60 11 8	3139
	SUN E.	28 29 48	3448	27 8 26	3445	25 47 0	3441	24 25 30	3437
21	Spica W.	113 12 10	3090	114 41 8	3087	116 10 10	3082	117 39 18	3049
	Saturn W.	69 48 41	3054	71 17 47	3050	72 46 58	3044	74 16 16	3039
	Antares W.	67 29 14	3108	68 57 14	3101	70 25 22	3096	71 53 37	3089
	SUN E.	17 36 48	3414	16 14 47	3409	14 52 41	3403	13 30 28	3396
25	SUN W.	27 9 21	3188	28 35 44	3180	30 2 17	3172	31 29 0	3163
	Aldebaran E.	64 4 17	3927	62 30 24	3919	60 56 21	3911	59 22 7	3902
	Pollux E.	107 48 42	3904	106 16 28	3895	104 44 3	3886	103 11 26	3877
26	SUN W.	38 45 20	3117	40 13 9	3107	41 41 10	3098	43 9 22	3088
	Aldebaran E.	51 28 17	3761	49 52 58	3752	48 17 27	3744	46 41 45	3735
	Pollux E.	95 25 29	3932	93 51 43	3923	92 17 45	3914	90 43 35	3905
27	SUN W.	50 33 26	3098	52 2 52	3097	53 32 31	3017	55 2 23	3008
	α Pegasi W.	43 50 37	3334	45 14 9	3289	46 38 33	3248	48 3 45	3209
	Aldebaran E.	38 40 13	3088	37 3 17	3078	35 26 8	3068	33 48 45	3059
	Pollux E.	82 49 51	3790	81 14 30	3751	79 38 58	3743	78 3 14	3733
	Regulus E.	118 48 18	3689	117 11 23	3680	115 34 16	3669	113 56 55	3660
28	SUN W.	62 35 10	3050	64 6 26	3039	65 37 56	3026	67 9 42	2915
	α Pegasi W.	55 20 28	3049	56 49 40	3021	58 19 27	2995	59 49 45	2971
	Venus W.	26 19 6	3051	27 48 16	3036	29 17 44	3022	30 47 29	3008
	Aldebaran E.	25 38 31	3607	23 59 46	2596	22 20 46	2585	20 41 31	2575
	Pollux E.	70 1 34	3698	68 24 38	3679	66 47 30	3671	65 10 11	3662
	Regulus E.	105 46 46	3606	104 8 2	3597	102 29 3	3586	100 49 49	3575
29	SUN W.	74 52 18	2844	76 25 36	2841	77 59 11	2838	79 33 2	2815
	α Pegasi W.	67 28 35	2963	69 1 41	2943	70 35 13	2925	72 9 8	2906
	Venus W.	38 20 38	2939	39 52 8	2925	41 23 55	2911	42 56 0	2898
	Pollux E.	57 0 42	2921	55 22 16	2914	53 43 40	2907	52 4 54	2900
	Regulus E.	92 29 51	2619	90 49 4	2607	89 8 1	2495	87 26 41	2484

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sideral Time of the Semi-diameter passing the Meridian.	Equation of Time, to be added to Apparent Time.	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Semi-diameter.			
		^h ^m ^s	^s	[°] ['] ["]	["]	[°] ['] ["]	^s	^m ^s	^s
Sun.	1	22 50 46.02	9.350	S. 7 21 18.8	57.14	16 10.24	65.39	12 27.72	0.507
Mon.	2	22 54 30.13	9.329	6 58 24.7	57.39	16 10.00	65.32	12 15.31	0.528
Tues.	3	22 58 13.72	9.308	6 35 24.7	57.62	16 9.75	65.25	12 2.39	0.548
Wed.	4	23 1 56.84	9.289	6 12 19.4	57.84	16 9.51	65.18	11 49.00	0.567
Thur.	5	23 5 39.50	9.270	5 49 9.1	58.04	16 9.26	65.12	11 35.15	0.586
Fri.	6	23 9 21.72	9.252	5 25 54.0	58.23	16 9.01	65.06	11 20.86	0.603
Sat.	7	23 13 3.53	9.235	5 2 34.6	58.40	16 8.76	65.00	11 6.16	0.620
Sun.	8	23 16 44.95	9.220	4 49 11.4	58.55	16 8.50	64.94	10 51.07	0.636
Mon.	9	23 20 26.01	9.205	4 15 44.7	58.69	16 8.24	64.89	10 35.61	0.651
Tues.	10	23 24 6.72	9.191	3 52 14.7	58.82	16 7.98	64.84	10 19.81	0.665
Wed.	11	23 27 47.11	9.178	3 28 41.9	58.93	16 7.71	64.80	10 3.70	0.678
Thur.	12	23 31 27.21	9.166	3 5 6.6	59.02	16 7.44	64.76	9 47.29	0.689
Fri.	13	23 35 7.04	9.155	2 41 29.2	59.10	16 7.17	64.72	9 30.61	0.700
Sat.	14	23 38 46.62	9.146	2 17 50.2	59.17	16 6.90	64.68	9 13.69	0.710
Sun.	15	23 42 25.97	9.137	1 54 9.7	59.22	16 6.62	64.64	8 56.53	0.719
Mon.	16	23 46 5.12	9.129	1 30 28.2	59.25	16 6.34	64.61	8 39.17	0.727
Tues.	17	23 49 44.09	9.122	1 6 46.0	59.27	16 6.06	64.58	8 21.64	0.734
Wed.	18	23 53 22.88	9.116	0 43 3.6	59.28	16 5.79	64.55	8 3.96	0.740
Thur.	19	23 57 1.53	9.110	S. 0 19 21.3	59.27	16 5.51	64.53	7 46.09	0.746
Fri.	20	0 0 40.05	9.105	N. 0 4 20.6	59.24	16 5.23	64.51	7 28.11	0.751
Sat.	21	0 4 18.47	9.100	0 28 1.8	59.20	16 4.95	64.49	7 10.01	0.756
Sun.	22	0 7 56.79	9.097	0 51 41.9	59.15	16 4.68	64.48	6 51.83	0.759
Mon.	23	0 11 35.04	9.094	1 15 20.5	59.08	16 4.40	64.47	6 33.58	0.762
Tues.	24	0 15 13.24	9.092	1 38 57.0	58.99	16 4.12	64.46	6 15.27	0.764
Wed.	25	0 18 51.38	9.090	2 2 31.0	58.88	16 3.84	64.46	5 56.92	0.766
Thur.	26	0 22 29.49	9.089	2 26 2.4	58.76	16 3.57	64.46	5 38.53	0.766
Fri.	27	0 26 7.59	9.089	2 49 30.8	58.63	16 3.29	64.46	5 20.13	0.766
Sat.	28	0 29 45.71	9.090	3 12 55.8	58.48	16 3.02	64.46	5 1.75	0.765
Sun.	29	0 33 23.86	9.092	3 36 17.1	58.31	16 2.74	64.47	4 43.40	0.764
Mon.	30	0 37 2.05	9.094	3 59 34.2	58.13	16 2.47	64.48	4 25.08	0.762
Tues.	31	0 40 40.30	9.097	4 22 46.7	57.94	16 2.19	64.49	4 6.83	0.759
Wed.	32	0 44 18.63	9.101	N. 4 45 54.5	57.73	16 1.92	64.51	3 48.65	0.755

NOTE. — Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sideral Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be subtracted from Mean Time.	Diff. for 1 hour.	Sidereal Time.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.			
		^h ^m ^s	^s	[°] ['] ["]	^s	^m ^s	^s	^h ^m ^s
Sun.	1	22 50 44.07	9.350	S. 7 21' 30.7"	57.14	12 27.83	0.507	22 38 16.24
Mon.	2	22 54 28.22	9.329	6 58 36.4	57.39	12 15.43	0.528	22 42 12.79
Tues.	3	22 58 11.85	9.308	6 35 36.3	57.62	12 2.50	0.548	22 46 9.35
Wed.	4	23 1 55.01	9.289	6 12 30.8	57.84	11 49.12	0.567	22 50 5.89
Thur.	5	23 5 37.71	9.270	5 49 20.3	58.04	11 35.26	0.586	22 54 2.45
Fri.	6	23 9 19.97	9.252	5 26 5.0	58.23	11 20.97	0.603	22 57 59.00
Sat.	7	23 13 1.82	9.235	5 2 45.4	58.40	11 6.27	0.620	23 1 55.55
Sun.	8	23 16 43.28	9.220	4 39 22.0	58.55	10 51.18	0.636	23 5 52.10
Mon.	9	23 20 24.38	9.205	4 15 55.1	58.69	10 35.73	0.651	23 9 48.65
Tues.	10	23 24 5.13	9.191	3 52 24.9	58.82	10 19.92	0.665	23 13 45.21
Wed.	11	23 27 45.57	9.178	3 28 51.8	58.93	10 3.81	0.678	23 17 41.76
Thur.	12	23 31 25.71	9.166	3 5 16.2	59.02	9 47.40	0.689	23 21 38.31
Fri.	13	23 35 5.58	9.155	2 41 38.6	59.10	9 30.72	0.700	23 25 34.86
Sat.	14	23 38 45.21	9.146	2 17 59.3	59.17	9 13.80	0.710	23 29 31.41
Sun.	15	23 42 24.61	9.137	1 54 18.5	59.22	8 56.64	0.719	23 33 27.97
Mon.	16	23 46 3.80	9.129	1 30 36.7	59.25	8 39.28	0.727	23 37 24.52
Tues.	17	23 49 42.81	9.122	1 6 54.3	59.27	8 21.74	0.734	23 41 21.07
Wed.	18	23 53 21.65	9.116	0 43 11.6	59.28	8 4.03	0.740	23 45 17.62
Thur.	19	23 57 0.35	9.110	S. 0 19 28.9	59.27	7 46.18	0.746	23 49 14.17
Fri.	20	0 0 38.92	9.105	N. 0 4 13.3	59.24	7 28.20	0.751	23 53 10.72
Sat.	21	0 4 17.38	9.100	0 27 54.8	59.20	7 10.10	0.756	23 57 7.28
Sun.	22	0 7 55.75	9.097	0 51 35.2	59.15	6 51.92	0.759	0 1 3.83
Mon.	23	0 11 34.05	9.094	1 15 14.0	59.08	6 33.67	0.762	0 5 0.38
Tues.	24	0 15 12.29	9.092	1 38 50.8	58.99	6 15.36	0.764	0 8 56.93
Wed.	25	0 18 50.48	9.090	2 2 25.2	58.88	5 57.00	0.766	0 12 53.48
Thur.	26	0 22 28.64	9.089	2 25 56.9	58.76	5 38.60	0.766	0 16 50.04
Fri.	27	0 26 6.78	9.089	2 49 25.6	58.63	5 20.18	0.766	0 20 46.60
Sat.	28	0 29 44.95	9.090	3 12 50.9	58.48	5 1.81	0.765	0 24 43.14
Sun.	29	0 33 23.15	9.092	3 36 12.4	58.31	4 43.46	0.764	0 28 39.69
Mon.	30	0 37 1.38	9.094	3 59 29.9	58.13	4 25.14	0.762	0 32 36.24
Tues.	31	0 40 39.68	9.097	4 22 42.8	57.94	4 6.89	0.759	0 36 32.79
Wed.	32	0 44 18.05	9.101	N. 4 45 50.9	57.73	3 48.70	0.755	0 40 29.35

NOTE.—The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S					Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal Oh.
		True LONGITUDE.		Diff. for 1 hour.	LATITUDE.				
		λ	λ'						
1	61	341° 14' 5.2"	14' 3.7"	150.36	—0.63	9.9962979	44.6	1 21 30.37	
2	62	342 14 13.0	14 11.4	150.27	0.60	.9964056	45.0	1 17 34.46	
3	63	343 14 18.6	14 17.0	150.18	0.54	.9965145	45.5	1 13 38.56	
4	64	344 14 22.1	14 20.3	150.09	0.46	.9966243	46.0	1 9 42.65	
5	65	345 14 23.5	14 21.6	150.01	0.36	.9967355	46.6	1 5 46.74	
6	66	346 14 22.8	14 20.9	149.92	0.24	.9968481	47.2	1 1 50.83	
7	67	347 14 20.1	14 18.1	149.84	—0.10	.9969621	47.8	0 57 54.93	
8	68	348 14 15.5	14 13.4	149.76	+0.05	.9970776	48.4	0 53 58.03	
9	69	349 14 8.9	14 6.7	149.68	0.18	.9971945	49.0	0 50 3.13	
10	70	350 14 0.3	13 58.0	149.60	0.31	.9973128	49.5	0 46 7.23	
11	71	351 13 49.8	13 47.5	149.53	0.42	.9974323	50.0	0 42 11.32	
12	72	352 13 37.5	13 35.1	149.45	0.51	.9975530	50.5	0 38 15.41	
13	73	353 13 23.5	13 21.0	149.38	0.57	.9976749	51.0	0 34 19.50	
14	74	354 13 7.8	13 5.2	149.30	0.60	.9977978	51.4	0 30 23.59	
15	75	355 12 50.3	12 47.6	149.23	0.59	.9979215	51.7	0 26 27.69	
16	76	356 12 31.0	12 28.3	149.16	0.55	.9980460	51.9	0 22 31.78	
17	77	357 12 10.0	12 7.2	149.09	0.49	.9981709	52.1	0 18 35.87	
18	78	358 11 47.3	11 44.4	149.02	0.41	.9982962	52.2	0 14 39.96	
19	79	359 11 22.9	11 19.8	148.94	0.31	.9984217	52.3	0 10 44.06	
20	80	0 10 56.6	10 53.5	148.87	0.19	.9985473	52.3	0 6 48.15	
21	81	1 10 28.5	10 25.4	148.79	+0.06	.9986728	52.3	0 2 52.25	
22	82	2 9 58.5	9 55.3	148.71	—0.07	.9987981	52.2	23 55 0.44	
23	83	3 9 26.6	9 23.3	148.63	0.20	.9989230	52.0	23 51 4.53	
24	84	4 8 52.6	8 49.2	148.55	0.30	.9990476	51.8	23 47 8.63	
25	85	5 8 16.5	8 13.0	148.45	0.39	.9991717	51.6	23 43 12.73	
26	86	6 7 38.2	7 34.7	148.36	0.46	.9992954	51.5	23 39 16.83	
27	87	7 6 57.7	6 54.1	148.26	0.49	.9994188	51.4	23 35 20.91	
28	88	8 6 14.9	6 11.2	148.17	0.50	.9995420	51.3	23 31 25.01	
29	89	9 5 29.8	5 26.0	148.07	0.48	.9996650	51.2	23 27 29.10	
30	90	10 4 42.4	4 38.5	147.98	0.43	.9997877	51.2	23 23 33.20	
31	91	11 3 52.7	3 48.8	147.88	0.35	9.9999103	51.1	23 19 37.29	
32	92	12 3 0.7	2 56.7	147.79	—0.25	0.0000329	51.1	23 15 41.39	

NOTE: λ corresponds to the true equinox of the date, λ' to the mean equinox of January 0d.

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	THE MOON'S									
	SEMI-DIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.	
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.		
1	15 50.6	15 56.0	58 2.3	+1.63	58 22.0	+1.64	5 39.1	2.24	6.9	
2	16 1.4	16 6.7	58 41.7	1.64	59 1.2	1.60	6 34.4	2.36	7.9	
3	16 11.8	16 16.7	59 20.1	1.53	59 38.0	1.42	7 32.2	2.44	8.9	
4	16 21.1	16 25.0	59 54.2	1.27	60 8.5	1.08	8 31.4	2.48	9.9	
5	16 28.2	16 30.6	60 20.3	0.85	60 29.0	+0.59	9 31.0	2.47	10.9	
6	16 32.0	16 32.5	60 34.3	+0.29	60 36.0	-0.02	10 29.6	2.41	11.9	
7	16 31.9	16 30.2	60 33.8	-0.35	60 27.5	0.68	11 26.5	2.33	12.9	
8	16 27.4	16 23.6	60 17.4	1.00	60 3.5	1.30	12 21.3	2.24	13.9	
9	16 18.9	16 13.4	59 46.2	1.56	59 26.0	1.79	13 14.2	2.17	14.9	
10	16 7.2	16 0.5	59 3.3	1.97	58 38.7	2.10	14 5.6	2.11	15.9	
11	15 53.5	15 46.3	58 12.9	2.18	57 46.3	2.21	14 55.8	2.08	16.9	
12	15 39.0	15 31.9	57 19.7	2.20	56 53.6	2.14	15 45.4	2.06	17.9	
13	15 25.0	15 18.5	56 28.3	2.05	56 4.4	1.92	16 34.5	2.04	18.9	
14	15 12.5	15 7.0	55 42.2	1.77	55 22.0	1.59	17 23.3	2.03	19.9	
15	15 2.1	14 57.9	55 4.1	1.40	54 48.5	1.20	18 11.8	2.01	20.9	
16	14 54.3	14 51.4	54 35.4	0.99	54 24.8	0.77	18 59.9	1.99	21.9	
17	14 49.2	14 47.8	54 16.8	0.56	54 11.4	-0.35	19 47.3	1.96	22.9	
18	14 47.0	14 46.9	54 8.5	-0.14	54 8.0	+0.05	20 34.0	1.93	23.9	
19	14 47.4	14 48.4	54 9.8	+0.24	54 13.8	0.42	21 20.0	1.90	24.9	
20	14 50.1	14 52.2	54 19.8	0.58	54 27.6	0.72	22 5.2	1.88	25.9	
21	14 54.7	14 57.7	54 37.0	0.84	54 47.8	0.95	22 50.1	1.87	26.9	
22	15 1.0	15 4.5	54 59.8	1.04	55 12.8	1.11	23 34.9	1.87	27.9	
23	15 8.2	15 12.1	55 26.5	1.17	55 40.8	1.21	6		28.9	
24	15 16.1	15 20.2	55 55.5	1.24	56 10.5	1.25	0 20.2	1.90	0.2	
25	15 24.3	15 28.4	56 25.5	1.25	56 40.6	1.25	1 6.4	1.95	1.2	
26	15 32.4	15 36.4	56 55.5	1.23	57 10.2	1.21	1 54.0	2.02	2.2	
27	15 40.4	15 44.2	57 24.6	1.19	57 38.7	1.16	2 43.7	2.11	3.2	
28	15 48.0	15 51.6	57 52.5	1.13	58 5.9	1.10	3 35.7	2.22	4.2	
29	15 55.1	15 58.5	58 18.8	1.06	58 31.3	1.02	4 30.0	2.31	5.2	
30	16 1.8	16 4.9	58 43.3	0.97	58 54.6	0.92	5 26.4	2.38	6.2	
31	16 7.8	16 10.4	59 5.3	0.85	59 15.0	0.76	6 23.9	2.41	7.2	
32	16 12.8	16 14.8	59 23.6	+0.66	59 30.9	+0.55	7 21.7	2.40	8.2	

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SUNDAY 1.					TUESDAY 3.				
0	4 5 14.71	2.3045	N.15 26 57.8	6.366	0	6 0 42.53	2.4941	N.18 39 42.9	1.349
1	4 7 33.11	2.3089	15 33 17.2	6.382	1	6 3 12.26	2.4970	18 41 0.2	1.327
2	4 9 51.78	2.3133	15 39 31.6	6.197	2	6 5 42.17	2.4996	18 42 10.2	1.104
3	4 12 10.72	2.3178	15 45 40.9	6.111	3	6 8 12.24	2.5026	18 43 12.8	0.981
4	4 14 29.92	2.3223	15 51 45.0	6.024	4	6 10 42.47	2.5062	18 44 7.9	0.857
5	4 16 49.39	2.3268	15 57 43.8	5.937	5	6 13 12.86	2.5078	18 44 55.6	0.733
6	4 19 9.13	2.3313	16 3 37.4	5.848	6	6 15 43.41	2.5104	18 45 35.8	0.608
7	4 21 29.14	2.3357	16 9 25.7	5.759	7	6 18 14.11	2.5129	18 46 8.5	0.483
8	4 23 49.41	2.3401	16 15 8.5	5.668	8	6 20 44.96	2.5168	18 46 33.7	0.357
9	4 26 9.95	2.3445	16 20 45.9	5.577	9	6 23 15.95	2.5176	18 46 51.3	0.230
10	4 28 30.75	2.3489	16 26 17.7	5.484	10	6 25 47.07	2.5196	18 47 1.3	0.104
11	4 30 51.82	2.3533	16 31 44.0	5.391	11	6 28 18.33	2.5220	18 47 3.8	0.023
12	4 33 13.15	2.3577	16 37 4.6	5.297	12	6 30 49.72	2.5241	18 46 58.6	0.150
13	4 35 34.74	2.3621	16 42 19.6	5.202	13	6 33 21.23	2.5262	18 46 45.8	0.277
14	4 37 56.60	2.3664	16 47 28.8	5.106	14	6 35 52.86	2.5282	18 46 25.3	0.405
15	4 40 18.71	2.3707	16 52 32.2	5.008	15	6 38 24.61	2.5301	18 45 57.1	0.533
16	4 42 41.08	2.3750	16 57 29.8	4.910	16	6 40 56.47	2.5319	18 45 21.3	0.661
17	4 45 3.71	2.3793	17 2 21.5	4.812	17	6 43 28.43	2.5336	18 44 37.8	0.790
18	4 47 26.60	2.3836	17 7 7.2	4.712	18	6 46 0.50	2.5352	18 43 46.5	0.919
19	4 49 49.74	2.3878	17 11 46.9	4.612	19	6 48 32.66	2.5368	18 42 47.6	1.047
20	4 52 13.13	2.3920	17 16 20.6	4.510	20	6 51 4.92	2.5383	18 41 40.9	1.176
21	4 54 36.77	2.3962	17 20 48.1	4.408	21	6 53 37.26	2.5397	18 40 26.5	1.305
22	4 57 0.67	2.4004	17 25 9.5	4.304	22	6 56 9.69	2.5410	18 39 4.3	1.434
23	4 59 24.82	2.4045	N.17 29 24.6	4.200	23	6 58 42.19	2.5422	N.18 37 34.3	1.564
MONDAY 2.					WEDNESDAY 4.				
0	5 1 49.21	2.4088	N.17 33 33.5	4.096	0	7 1 14.77	2.5434	N.18 35 56.6	1.693
1	5 4 13.85	2.4127	17 37 36.0	3.989	1	7 3 47.41	2.5445	18 34 11.1	1.823
2	5 6 38.73	2.4167	17 41 32.2	3.882	2	7 6 20.12	2.5455	18 32 17.9	1.952
3	5 9 3.85	2.4207	17 45 22.0	3.776	3	7 8 52.88	2.5465	18 30 16.9	2.081
4	5 11 29.21	2.4247	17 49 5.3	3.667	4	7 11 25.70	2.5474	18 28 8.2	2.210
5	5 13 54.81	2.4286	17 52 42.1	3.558	5	7 13 58.57	2.5482	18 25 51.7	2.340
6	5 16 20.64	2.4325	17 56 12.3	3.448	6	7 16 31.48	2.5488	18 23 27.4	2.469
7	5 18 46.71	2.4363	17 59 35.9	3.338	7	7 19 4.43	2.5494	18 20 55.4	2.598
8	5 21 13.00	2.4401	18 2 52.9	3.226	8	7 21 37.41	2.5499	18 18 15.7	2.727
9	5 23 39.52	2.4438	18 6 3.1	3.114	9	7 24 10.42	2.5503	18 15 28.2	2.856
10	5 26 6.26	2.4476	18 9 6.6	3.001	10	7 26 43.45	2.5507	18 12 33.0	2.985
11	5 28 33.23	2.4513	18 12 3.3	2.887	11	7 29 16.50	2.5510	18 9 30.1	3.113
12	5 31 0.41	2.4548	18 14 53.1	2.773	12	7 31 49.57	2.5512	18 6 19.5	3.241
13	5 33 27.81	2.4584	18 17 36.1	2.658	13	7 34 22.64	2.5513	18 3 1.2	3.369
14	5 35 55.42	2.4619	18 20 12.1	2.543	14	7 36 55.72	2.5513	17 59 35.2	3.496
15	5 38 23.24	2.4654	18 22 41.1	2.426	15	7 39 28.80	2.5513	17 56 1.6	3.623
16	5 40 51.27	2.4688	18 25 3.2	2.309	16	7 42 1.87	2.5511	17 52 20.4	3.750
17	5 43 19.50	2.4722	18 27 18.2	2.192	17	7 44 34.93	2.5509	17 48 31.5	3.877
18	5 45 47.93	2.4755	18 29 26.2	2.073	18	7 47 7.98	2.5506	17 44 35.1	4.004
19	5 48 16.56	2.4788	18 31 27.0	1.954	19	7 49 41.01	2.5503	17 40 31.1	4.130
20	5 50 45.38	2.4820	18 33 20.7	1.834	20	7 52 14.01	2.5498	17 36 19.5	4.255
21	5 53 14.39	2.4851	18 35 7.1	1.713	21	7 54 46.98	2.5493	17 32 0.4	4.380
22	5 55 43.59	2.4882	18 36 46.3	1.592	22	7 57 19.92	2.5487	17 27 33.9	4.505
23	5 58 12.97	2.4912	18 38 18.2	1.471	23	7 59 52.82	2.5480	17 22 59.9	4.629
24	6 0 42.53	2.4941	N.18 39 42.9	1.349	24	8 2 25.68	2.5472	N.17 18 18.4	4.753

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
THURSDAY 5.					SATURDAY 7.				
0	8 2 25.68	2.5472	N.17 18 18.4	4.753	0	10 2 36.54	2.4416	N.11 23 2.0	9.653
1	8 4 58.49	2.5463	17 13 29.5	4.876	1	10 5 2.94	2.4384	11 13 20.6	9.726
2	8 7 31.24	2.5454	17 8 33.3	4.998	2	10 7 29.15	2.4353	11 3 34.9	9.797
3	8 10 3.94	2.5445	17 3 29.8	5.119	3	10 9 55.17	2.4321	10 53 44.9	9.868
4	8 12 36.58	2.5434	16 58 19.0	5.240	4	10 12 21.00	2.4289	10 43 50.7	9.937
5	8 15 9.15	2.5423	16 53 0.9	5.361	5	10 14 46.64	2.4257	10 33 52.4	10.006
6	8 17 41.65	2.5411	16 47 35.6	5.481	6	10 17 12.08	2.4225	10 23 50.0	10.073
7	8 20 14.08	2.5398	16 42 3.1	5.601	7	10 19 37.34	2.4193	10 13 43.7	10.138
8	8 22 46.43	2.5386	16 36 23.5	5.720	8	10 22 2.40	2.4161	10 3 33.5	10.201
9	8 25 18.70	2.5371	16 30 36.8	5.838	9	10 24 27.27	2.4128	9 53 19.5	10.263
10	8 27 50.88	2.5356	16 24 43.0	5.954	10	10 26 51.94	2.4096	9 43 1.9	10.323
11	8 30 22.97	2.5341	16 18 42.3	6.070	11	10 29 16.42	2.4063	9 32 40.7	10.383
12	8 32 54.97	2.5325	16 12 34.6	6.185	12	10 31 40.70	2.4031	9 22 15.9	10.441
13	8 35 26.87	2.5308	16 6 20.0	6.300	13	10 34 4.79	2.3998	9 11 47.7	10.496
14	8 37 58.66	2.5291	15 59 58.6	6.414	14	10 36 28.68	2.3966	9 1 16.2	10.553
15	8 40 30.35	2.5273	15 53 30.3	6.527	15	10 38 52.38	2.3934	8 50 41.4	10.607
16	8 43 1.93	2.5254	15 46 55.3	6.639	16	10 41 15.89	2.3902	8 40 3.4	10.659
17	8 45 33.40	2.5235	15 40 13.6	6.751	17	10 43 39.20	2.3869	8 29 22.3	10.709
18	8 48 4.75	2.5215	15 33 25.2	6.861	18	10 46 2.32	2.3837	8 18 38.3	10.756
19	8 50 35.98	2.5195	15 26 30.3	6.970	19	10 48 25.24	2.3804	8 7 51.3	10.806
20	8 53 7.09	2.5174	15 19 28.8	7.078	20	10 50 47.97	2.3772	7 57 1.5	10.853
21	8 55 38.07	2.5153	15 12 20.9	7.186	21	10 53 10.50	2.3739	7 46 9.0	10.896
22	8 58 8.92	2.5131	15 5 6.5	7.292	22	10 55 32.84	2.3707	7 35 13.8	10.941
23	9 0 39.64	2.5108	N.14 57 45.8	7.398	23	10 57 54.99	2.3675	N. 7 24 16.1	10.983
FRIDAY 6.					SUNDAY 8.				
0	9 3 10.22	2.5085	N.14 50 18.8	7.502	0	11 0 16.94	2.3643	N. 7 13 15.9	11.023
1	9 5 40.66	2.5061	14 42 45.6	7.605	1	11 2 38.70	2.3611	7 2 13.3	11.062
2	9 8 10.96	2.5037	14 35 6.2	7.707	2	11 5 0.27	2.3580	6 51 8.4	11.100
3	9 10 41.11	2.5013	14 27 20.7	7.808	3	11 7 21.65	2.3548	6 40 1.3	11.136
4	9 13 11.11	2.4988	14 19 29.2	7.908	4	11 9 42.84	2.3516	6 28 52.1	11.170
5	9 15 40.96	2.4963	14 11 31.7	8.007	5	11 12 3.84	2.3484	6 17 40.9	11.203
6	9 18 10.66	2.4937	14 3 28.3	8.104	6	11 14 24.65	2.3452	6 6 27.7	11.235
7	9 20 40.20	2.4911	13 55 19.1	8.201	7	11 16 45.27	2.3421	5 55 12.6	11.266
8	9 23 9.59	2.4885	13 47 4.2	8.296	8	11 19 5.70	2.3390	5 43 55.8	11.295
9	9 25 38.82	2.4858	13 38 43.6	8.391	9	11 21 25.95	2.3359	5 32 37.2	11.323
10	9 28 7.88	2.4831	13 30 17.3	8.484	10	11 23 46.01	2.3328	5 21 17.1	11.348
11	9 30 36.78	2.4803	13 21 45.5	8.576	11	11 26 5.89	2.3296	5 9 55.5	11.373
12	9 33 5.51	2.4775	13 13 8.2	8.666	12	11 28 25.58	2.3267	4 58 32.4	11.396
13	9 35 34.07	2.4746	13 4 25.5	8.756	13	11 30 45.09	2.3237	4 47 8.0	11.416
14	9 38 2.46	2.4717	12 55 37.5	8.843	14	11 33 4.42	2.3207	4 35 42.3	11.438
15	9 40 30.67	2.4688	12 46 44.3	8.930	15	11 35 23.57	2.3177	4 24 15.4	11.457
16	9 42 58.71	2.4659	12 37 45.9	9.015	16	11 37 42.54	2.3147	4 12 47.5	11.474
17	9 45 26.57	2.4629	12 28 42.4	9.100	17	11 40 1.34	2.3118	4 1 18.5	11.490
18	9 47 54.26	2.4599	12 19 33.9	9.183	18	11 42 19.96	2.3088	3 49 48.6	11.505
19	9 50 21.77	2.4569	12 10 20.4	9.265	19	11 44 38.40	2.3059	3 38 17.9	11.518
20	9 52 49.09	2.4539	12 1 2.1	9.345	20	11 46 56.67	2.3030	3 26 46.4	11.529
21	9 55 16.23	2.4508	11 51 39.0	9.424	21	11 49 14.77	2.3002	3 15 14.2	11.540
22	9 57 43.18	2.4478	11 42 11.3	9.501	22	11 51 32.69	2.2973	3 3 41.5	11.549
23	10 0 9.95	2.4447	11 32 38.9	9.578	23	11 53 50.44	2.2945	2 52 8.2	11.557
24	10 2 36.54	2.4416	N.11 23 2.0	9.653	24	11 56 8.03	2.2917	N. 2 40 34.5	11.564

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
MONDAY 9.					WEDNESDAY 11.				
0	11 56 8.03	2.2917	N. 2 40 34.5	11.564	0	13 43 26.36	2.1992	S. 6 18 14.9	10.484
1	11 58 25.45	2.2890	2 29 0.5	11.569	1	13 45 37.73	2.1898	6 28 40.8	10.406
2	12 0 42.71	2.2862	2 17 26.2	11.573	2	13 47 49.02	2.1874	6 39 3.7	10.367
3	12 2 59.80	2.2835	2 5 51.7	11.576	3	13 50 0.22	2.1890	6 49 23.6	10.307
4	12 5 16.73	2.2808	1 54 17.1	11.577	4	13 52 11.34	2.1846	6 59 40.5	10.266
5	12 7 33.50	2.2782	1 42 42.5	11.577	5	13 54 22.38	2.1838	7 9 54.3	10.204
6	12 9 50.11	2.2755	1 31 7.9	11.576	6	13 56 33.34	2.1820	7 20 5.0	10.161
7	12 12 6.56	2.2729	1 19 33.5	11.572	7	13 58 44.23	2.1808	7 30 12.5	10.096
8	12 14 22.86	2.2703	1 7 59.3	11.568	8	14 0 55.04	2.1796	7 40 16.7	10.044
9	12 16 39.01	2.2678	0 56 25.4	11.563	9	14 3 5.78	2.1784	7 50 17.7	9.989
10	12 18 55.00	2.2653	0 44 51.8	11.556	10	14 5 16.44	2.1772	8 0 15.4	9.933
11	12 21 10.84	2.2628	0 33 18.7	11.548	11	14 7 27.03	2.1760	8 10 9.7	9.877
12	12 23 26.53	2.2603	0 21 46.1	11.538	12	14 9 37.56	2.1748	8 20 0.6	9.819
13	12 25 42.07	2.2578	N. 0 10 14.1	11.528	13	14 11 48.01	2.1737	8 29 48.0	9.761
14	12 27 57.46	2.2554	S. 0 1 17.3	11.516	14	14 13 58.40	2.1726	8 39 31.9	9.703
15	12 30 12.71	2.2530	0 12 47.9	11.503	15	14 16 8.72	2.1716	8 49 12.2	9.648
16	12 32 27.82	2.2506	0 24 17.7	11.489	16	14 18 18.98	2.1704	8 58 49.0	9.593
17	12 34 42.78	2.2483	0 35 46.6	11.474	17	14 20 29.18	2.1694	9 8 22.1	9.539
18	12 36 57.61	2.2460	0 47 14.6	11.457	18	14 22 39.31	2.1683	9 17 51.6	9.490
19	12 39 12.30	2.2438	0 58 41.5	11.439	19	14 24 49.38	2.1672	9 27 17.4	9.436
20	12 41 26.86	2.2415	1 10 7.3	11.420	20	14 26 59.39	2.1662	9 36 39.4	9.383
21	12 43 41.28	2.2393	1 21 32.0	11.400	21	14 29 9.34	2.1654	9 45 57.6	9.332
22	12 45 55.57	2.2371	1 32 55.4	11.379	22	14 31 19.24	2.1646	9 55 12.0	9.287
23	12 48 9.73	2.2349	S. 1 44 17.5	11.357	23	14 33 29.08	2.1636	S. 10 4 22.5	9.243
TUESDAY 10.					THURSDAY 12.				
0	12 50 23.76	2.2327	S. 1 55 38.2	11.333	0	14 35 38.87	2.1627	S. 10 13 29.1	9.277
1	12 52 37.66	2.2306	2 6 57.5	11.309	1	14 37 48.61	2.1616	10 22 31.7	9.211
2	12 54 51.44	2.2285	2 18 15.3	11.283	2	14 39 58.29	2.1609	10 31 30.4	9.145
3	12 57 5.09	2.2265	2 29 31.5	11.256	3	14 42 7.92	2.1601	10 40 25.1	9.078
4	12 59 18.62	2.2245	2 40 46.0	11.228	4	14 44 17.50	2.1592	10 49 15.7	9.010
5	13 1 32.03	2.2226	2 51 58.8	11.199	5	14 46 27.03	2.1584	10 58 2.2	8.941
6	13 3 45.33	2.2206	3 3 9.9	11.169	6	14 48 36.51	2.1576	11 6 44.6	8.872
7	13 5 58.51	2.2187	3 14 19.1	11.138	7	14 50 45.95	2.1569	11 15 22.8	8.802
8	13 8 11.57	2.2168	3 25 26.4	11.106	8	14 52 55.34	2.1561	11 23 56.9	8.732
9	13 10 24.52	2.2149	3 36 31.7	11.072	9	14 55 4.68	2.1554	11 32 26.7	8.661
10	13 12 37.36	2.2130	3 47 35.0	11.037	10	14 57 13.98	2.1546	11 40 52.3	8.590
11	13 14 50.09	2.2112	3 58 36.2	11.002	11	14 59 23.24	2.1539	11 49 13.6	8.518
12	13 17 2.71	2.2094	4 9 35.3	10.965	12	15 1 32.45	2.1532	11 57 30.5	8.446
13	13 19 15.22	2.2077	4 20 32.1	10.928	13	15 3 41.62	2.1525	12 5 43.1	8.374
14	13 21 27.63	2.2060	4 31 26.7	10.889	14	15 5 50.75	2.1518	12 13 51.4	8.301
15	13 23 39.94	2.2043	4 42 18.9	10.850	15	15 7 59.84	2.1512	12 21 55.2	8.227
16	13 25 52.14	2.2026	4 53 8.8	10.810	16	15 10 8.90	2.1505	12 29 54.6	8.153
17	13 28 4.25	2.2010	5 3 56.2	10.769	17	15 12 17.91	2.1499	12 37 49.5	8.078
18	13 30 16.26	2.1994	5 14 41.1	10.727	18	15 14 26.89	2.1493	12 45 40.0	8.003
19	13 32 28.17	2.1978	5 25 23.5	10.684	19	15 16 35.83	2.1487	12 53 25.9	7.927
20	13 34 39.99	2.1962	5 36 3.2	10.640	20	15 18 44.74	2.1481	13 1 7.3	7.851
21	13 36 51.72	2.1947	5 46 40.2	10.595	21	15 20 53.61	2.1475	13 8 44.1	7.775
22	13 39 3.35	2.1932	5 57 14.6	10.549	22	15 23 2.44	2.1469	13 16 16.3	7.699
23	13 41 14.90	2.1917	6 7 46.2	10.502	23	15 25 11.24	2.1464	13 23 43.9	7.622
24	13 43 26.36	2.1902	S. 6 18 14.9	10.454	24	15 27 20.01	2.1458	S. 13 31 6.9	7.544

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
FRIDAY 13.					SUNDAY 15.				
0	15 27 20.01	2.1466	S.13° 31' 6.9	7.344	0	17 9 46.62	2.1377	S.17° 48' 15.4	2.386
1	15 29 28.74	2.1462	13 38 25.2	7.286	1	17 11 53.96	2.1321	17 51 29.8	2.196
2	15 31 37.44	2.1447	13 45 38.8	7.187	2	17 14 1.27	2.1316	17 54 38.9	2.107
3	15 33 46.11	2.1443	13 52 47.7	7.108	3	17 16 8.55	2.1210	17 57 42.7	2.018
4	15 35 54.75	2.1437	13 59 51.8	7.029	4	17 18 15.79	2.1204	18 0 41.1	2.929
5	15 38 3.36	2.1432	14 6 51.2	6.950	5	17 20 23.00	2.1198	18 3 34.2	2.840
6	15 40 11.93	2.1426	14 13 45.8	6.870	6	17 22 30.17	2.1192	18 6 21.9	2.761
7	15 42 20.47	2.1421	14 20 35.6	6.789	7	17 24 37.31	2.1187	18 9 4.3	2.682
8	15 44 28.98	2.1416	14 27 20.5	6.708	8	17 26 44.41	2.1181	18 11 41.4	2.603
9	15 46 37.46	2.1412	14 34 0.6	6.627	9	17 28 51.47	2.1174	18 14 13.1	2.484
10	15 48 45.92	2.1407	14 40 35.8	6.546	10	17 30 58.50	2.1168	18 16 39.5	2.386
11	15 50 54.35	2.1402	14 47 6.1	6.465	11	17 33 5.49	2.1162	18 19 0.6	2.306
12	15 53 2.75	2.1397	14 53 31.6	6.383	12	17 35 12.44	2.1156	18 21 16.3	2.217
13	15 55 11.12	2.1393	14 59 52.1	6.301	13	17 37 19.35	2.1149	18 23 26.6	2.128
14	15 57 19.46	2.1388	15 6 7.7	6.219	14	17 39 26.23	2.1142	18 25 31.6	2.039
15	15 59 27.77	2.1383	15 12 18.3	6.136	15	17 41 33.06	2.1135	18 27 31.2	1.949
16	16 1 36.06	2.1378	15 18 24.0	6.053	16	17 43 39.85	2.1129	18 29 25.5	1.860
17	16 3 44.31	2.1373	15 24 24.6	5.969	17	17 45 46.60	2.1122	18 31 14.4	1.771
18	16 5 52.54	2.1369	15 30 20.2	5.885	18	17 47 53.31	2.1116	18 32 58.0	1.682
19	16 8 0.74	2.1364	15 36 10.8	5.801	19	17 49 59.98	2.1108	18 34 36.3	1.593
20	16 10 8.92	2.1360	15 41 56.4	5.717	20	17 52 6.60	2.1101	18 36 9.2	1.504
21	16 12 17.07	2.1356	15 47 36.9	5.633	21	17 54 13.18	2.1093	18 37 36.8	1.416
22	16 14 25.19	2.1352	15 53 12.4	5.548	22	17 56 19.71	2.1086	18 38 59.0	1.326
23	16 16 33.29	2.1346	S.15 58 42.7	5.463	23	17 58 26.20	2.1078	S.18 40 15.9	1.237
SATURDAY 14.					MONDAY 16.				
0	16 18 41.36	2.1344	S.16 4 8.0	5.378	0	18 0 32.65	2.1071	S.18 41 27.4	1.148
1	16 20 49.40	2.1338	16 9 28.2	5.293	1	18 2 39.05	2.1063	18 42 33.6	1.058
2	16 22 57.41	2.1333	16 14 43.2	5.208	2	18 4 45.40	2.1056	18 43 34.4	0.969
3	16 25 5.40	2.1329	16 19 53.1	5.122	3	18 6 51.71	2.1048	18 44 30.0	0.881
4	16 27 13.36	2.1324	16 24 57.8	5.036	4	18 8 57.97	2.1040	18 45 20.2	0.793
5	16 29 21.29	2.1320	16 29 57.4	4.950	5	18 11 4.18	2.1031	18 46 5.1	0.704
6	16 31 29.20	2.1316	16 34 51.8	4.864	6	18 13 10.34	2.1023	18 46 44.7	0.616
7	16 33 37.08	2.1311	16 39 41.0	4.777	7	18 15 16.45	2.1014	18 47 19.0	0.527
8	16 35 44.93	2.1306	16 44 25.0	4.690	8	18 17 22.51	2.1006	18 47 48.0	0.439
9	16 37 52.75	2.1302	16 49 3.8	4.603	9	18 19 28.52	2.0997	18 48 11.6	0.350
10	16 40 0.55	2.1296	16 53 37.4	4.516	10	18 21 34.47	2.0988	18 48 30.0	0.262
11	16 42 8.32	2.1292	16 58 5.8	4.429	11	18 23 40.37	2.0979	18 48 43.1	0.174
12	16 44 16.06	2.1288	17 2 28.9	4.342	12	18 25 46.22	2.0971	18 48 50.9	0.086
13	16 46 23.77	2.1283	17 6 46.8	4.255	13	18 27 52.02	2.0962	18 48 53.4	0.002
14	16 48 31.45	2.1278	17 10 59.5	4.167	14	18 29 57.76	2.0953	18 48 50.7	0.090
15	16 50 39.10	2.1273	17 15 6.9	4.079	15	18 32 3.45	2.0943	18 48 42.7	0.178
16	16 52 46.73	2.1268	17 19 9.0	3.991	16	18 34 9.08	2.0934	18 48 29.4	0.265
17	16 54 54.33	2.1263	17 23 5.8	3.903	17	18 36 14.65	2.0924	18 48 10.9	0.352
18	16 57 1.89	2.1258	17 26 57.4	3.816	18	18 38 20.17	2.0915	18 47 47.2	0.439
19	16 59 9.43	2.1253	17 30 43.7	3.727	19	18 40 25.63	2.0906	18 47 18.2	0.526
20	17 1 16.93	2.1248	17 34 24.6	3.639	20	18 42 31.04	2.0897	18 46 44.0	0.613
21	17 3 24.40	2.1243	17 38 0.2	3.550	21	18 44 36.39	2.0887	18 46 4.6	0.700
22	17 5 31.84	2.1238	17 41 30.6	3.462	22	18 46 41.68	2.0877	18 45 20.0	0.786
23	17 7 39.25	2.1232	17 44 55.7	3.373	23	18 48 46.91	2.0868	18 44 30.2	0.873
24	17 9 46.62	2.1227	S.17 48 15.4	3.283	24	18 50 52.07	2.0856	S.18 43 35.2	0.960

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
TUESDAY 17.					THURSDAY 19.				
0	18 50 52.07	2.0886	S.18 43' 35.2	0.960	0	20 29 40.61	2.0299	S.16 21' 53.9	4.846
1	18 52 57.17	2.0845	18 42 35.0	1.046	1	20 31 42.37	2.0287	16 17 0.9	4.920
2	18 55 2.21	2.0835	18 41 29.7	1.132	2	20 33 44.05	2.0275	16 12 3.5	4.994
3	18 57 7.19	2.0825	18 40 19.2	1.218	3	20 35 45.66	2.0263	16 7 1.6	5.067
4	18 59 12.11	2.0815	18 39 3.5	1.304	4	20 37 47.21	2.0251	16 1 55.4	5.140
5	19 1 16.97	2.0804	18 37 42.7	1.389	5	20 39 48.69	2.0240	15 56 44.8	5.213
6	19 3 21.76	2.0794	18 36 16.8	1.475	6	20 41 50.09	2.0228	15 51 29.8	5.285
7	19 5 26.49	2.0783	18 34 45.8	1.560	7	20 43 51.42	2.0216	15 46 10.5	5.357
8	19 7 31.15	2.0772	18 33 9.6	1.645	8	20 45 52.68	2.0204	15 40 47.0	5.428
9	19 9 35.75	2.0761	18 31 28.3	1.730	9	20 47 53.87	2.0193	15 35 19.2	5.499
10	19 11 40.28	2.0750	18 29 42.0	1.815	10	20 49 54.99	2.0181	15 29 47.1	5.570
11	19 13 44.75	2.0739	18 27 50.6	1.899	11	20 51 56.04	2.0169	15 24 10.8	5.641
12	19 15 49.15	2.0728	18 25 54.1	1.983	12	20 53 57.02	2.0158	15 18 30.2	5.711
13	19 17 53.48	2.0717	18 23 52.6	2.067	13	20 55 57.93	2.0147	15 12 45.4	5.781
14	19 19 57.75	2.0706	18 21 46.1	2.151	14	20 57 58.78	2.0135	15 6 56.5	5.850
15	19 22 1.94	2.0693	18 19 34.6	2.234	15	20 59 59.56	2.0124	15 1 3.5	5.919
16	19 24 6.07	2.0682	18 17 18.0	2.318	16	21 2 0.27	2.0113	14 55 6.3	5.988
17	19 26 10.13	2.0671	18 14 56.4	2.401	17	21 4 0.91	2.0102	14 49 5.0	6.056
18	19 28 14.12	2.0660	18 12 29.9	2.484	18	21 6 1.49	2.0091	14 42 59.6	6.123
19	19 30 18.04	2.0648	18 9 58.4	2.567	19	21 8 2.01	2.0081	14 36 50.2	6.190
20	19 32 21.90	2.0636	18 7 21.9	2.649	20	21 10 2.46	2.0070	14 30 36.8	6.257
21	19 34 25.68	2.0624	18 4 40.5	2.731	21	21 12 2.85	2.0059	14 24 19.4	6.323
22	19 36 29.39	2.0613	18 1 54.2	2.813	22	21 14 3.17	2.0048	14 17 58.0	6.389
23	19 38 33.03	2.0601	S.17 59 2.9	2.895	23	21 16 3.43	2.0038	S.14 11 32.7	6.455
WEDNESDAY 18.					FRIDAY 20.				
0	19 40 36.60	2.0590	S.17 56 6.8	2.977	0	21 18 3.63	2.0028	S.14 5 3.4	6.521
1	19 42 40.10	2.0578	17 53 5.8	3.058	1	21 20 3.77	2.0018	13 58 30.2	6.586
2	19 44 43.53	2.0566	17 49 59.9	3.139	2	21 22 3.84	2.0008	13 51 53.1	6.650
3	19 46 46.89	2.0553	17 46 49.2	3.219	3	21 24 3.86	1.9998	13 45 12.2	6.713
4	19 48 50.17	2.0541	17 43 33.6	3.299	4	21 26 3.82	1.9988	13 38 27.5	6.777
5	19 50 53.38	2.0529	17 40 13.2	3.379	5	21 28 3.72	1.9978	13 31 39.0	6.840
6	19 52 56.52	2.0518	17 36 48.1	3.459	6	21 30 3.56	1.9968	13 24 46.7	6.903
7	19 54 59.59	2.0506	17 33 18.1	3.539	7	21 32 3.34	1.9959	13 17 50.7	6.965
8	19 57 2.59	2.0494	17 29 43.4	3.619	8	21 34 3.07	1.9950	13 10 50.9	7.027
9	19 59 5.52	2.0482	17 26 3.9	3.698	9	21 36 2.74	1.9941	13 3 47.5	7.088
10	20 1 8.37	2.0470	17 22 19.7	3.776	10	21 38 2.36	1.9932	12 56 40.4	7.149
11	20 3 11.15	2.0457	17 18 30.8	3.854	11	21 40 1.93	1.9923	12 49 29.7	7.209
12	20 5 13.85	2.0445	17 14 37.2	3.932	12	21 42 1.44	1.9914	12 42 15.3	7.269
13	20 7 16.48	2.0433	17 10 38.9	4.010	13	21 44 0.90	1.9906	12 34 57.3	7.329
14	20 9 19.04	2.0420	17 6 35.9	4.088	14	21 46 0.31	1.9898	12 27 35.8	7.388
15	20 11 21.53	2.0408	17 2 28.3	4.165	15	21 47 59.67	1.9890	12 20 10.8	7.446
16	20 13 23.94	2.0396	16 58 16.1	4.243	16	21 49 58.99	1.9882	12 12 42.3	7.504
17	20 15 26.28	2.0384	16 53 59.2	4.319	17	21 51 58.26	1.9874	12 5 10.3	7.561
18	20 17 28.55	2.0371	16 49 37.8	4.396	18	21 53 57.48	1.9866	11 57 34.9	7.618
19	20 19 30.74	2.0359	16 45 11.8	4.472	19	21 55 56.66	1.9859	11 49 56.1	7.675
20	20 21 32.86	2.0347	16 40 41.2	4.548	20	21 57 55.79	1.9852	11 42 13.9	7.731
21	20 23 34.91	2.0335	16 36 6.1	4.623	21	21 59 54.88	1.9845	11 34 28.4	7.787
22	20 25 36.88	2.0323	16 31 26.5	4.698	22	22 1 53.93	1.9838	11 26 39.5	7.843
23	20 27 38.78	2.0311	16 26 42.4	4.772	23	22 3 52.93	1.9831	11 18 47.3	7.897
24	20 29 40.61	2.0299	S.16 21 53.9	4.846	24	22 5 51.90	1.9824	S.11 10 51.9	7.951

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SATURDAY 21.					MONDAY 23.				
0	22 5 51.90	1.9824	S. 11° 10' 51.9"	7.961	0	23 40 43.59	1.9806	S. 3° 57' 22.7"	9.889
1	22 7 50.83	1.9818	11 2 53.2	8.004	1	23 42 42.44	1.9812	3 47 29.0	9.907
2	22 9 49.72	1.9813	10 54 51.4	8.067	2	23 44 41.33	1.9819	3 37 33.9	9.931
3	22 11 48.57	1.9808	10 46 46.4	8.110	3	23 46 40.27	1.9827	3 27 37.4	9.964
4	22 13 47.39	1.9800	10 38 38.2	8.162	4	23 48 39.25	1.9836	3 17 39.5	9.976
5	22 15 46.18	1.9795	10 30 26.9	8.213	5	23 50 38.28	1.9843	3 7 40.2	9.998
6	22 17 44.93	1.9790	10 22 12.6	8.264	6	23 52 37.36	1.9851	2 57 39.7	10.019
7	22 19 43.65	1.9785	10 13 55.2	8.315	7	23 54 36.49	1.9859	2 47 37.9	10.040
8	22 21 42.35	1.9780	10 5 34.8	8.365	8	23 56 35.67	1.9868	2 37 34.9	10.060
9	22 23 41.02	1.9776	9 57 11.4	8.414	9	23 58 34.91	1.9878	2 27 30.8	10.079
10	22 25 39.66	1.9772	9 48 45.1	8.463	10	0 0 34.21	1.9887	2 17 25.5	10.097
11	22 27 38.28	1.9768	9 40 15.8	8.511	11	0 2 33.56	1.9897	2 7 19.1	10.116
12	22 29 36.87	1.9764	9 31 43.7	8.559	12	0 4 32.98	1.9907	1 57 11.7	10.132
13	22 31 35.44	1.9760	9 23 8.7	8.606	13	0 6 32.46	1.9916	1 47 3.3	10.148
14	22 33 33.99	1.9756	9 14 30.9	8.653	14	0 8 32.00	1.9926	1 36 53.9	10.163
15	22 35 32.52	1.9753	9 5 50.3	8.699	15	0 10 31.61	1.9943	1 26 43.6	10.178
16	22 37 31.03	1.9750	8 57 7.0	8.746	16	0 12 31.30	1.9964	1 16 32.5	10.192
17	22 39 29.53	1.9748	8 48 20.9	8.790	17	0 14 31.06	1.9986	1 6 20.6	10.208
18	22 41 28.01	1.9745	8 39 32.2	8.834	18	0 16 30.89	1.9978	0 56 7.9	10.217
19	22 43 26.48	1.9743	8 30 40.8	8.878	19	0 18 30.80	1.9991	0 45 54.5	10.229
20	22 45 24.93	1.9741	8 21 46.9	8.921	20	0 20 30.78	2.0004	0 35 40.4	10.240
21	22 47 23.37	1.9740	8 12 50.4	8.963	21	0 22 30.84	2.0018	0 25 25.7	10.260
22	22 49 21.81	1.9739	8 3 51.3	9.005	22	0 24 30.99	2.0032	0 15 10.4	10.269
23	22 51 20.24	1.9738	S. 7° 54' 49.7"	9.047	23	0 26 31.22	2.0046	S. 0 4 54.6	10.288
SUNDAY 22.					TUESDAY 24.				
0	22 53 18.66	1.9737	S. 7° 45' 45.6"	9.088	0	0 28 31.54	2.0060	N. 0 5 21.7	10.376
1	22 55 17.08	1.9737	7 36 39.1	9.128	1	0 30 31.94	2.0075	0 15 38.5	10.388
2	22 57 15.50	1.9736	7 27 30.2	9.168	2	0 32 32.44	2.0091	0 25 55.6	10.399
3	22 59 13.91	1.9736	7 18 18.9	9.207	3	0 34 33.03	2.0107	0 36 13.1	10.394
4	23 1 12.33	1.9736	7 9 5.3	9.245	4	0 36 33.72	2.0122	0 46 30.9	10.298
5	23 3 10.75	1.9737	6 59 49.4	9.283	5	0 38 34.50	2.0138	0 56 49.0	10.302
6	23 5 9.17	1.9738	6 50 31.3	9.320	6	0 40 35.38	2.0155	1 7 7.2	10.306
7	23 7 7.60	1.9739	6 41 10.9	9.357	7	0 42 36.26	2.0172	1 17 25.6	10.307
8	23 9 6.04	1.9741	6 31 48.4	9.393	8	0 44 37.45	2.0190	1 27 44.0	10.308
9	23 11 4.49	1.9743	6 22 23.7	9.429	9	0 46 38.65	2.0208	1 38 2.5	10.309
10	23 13 2.95	1.9746	6 12 56.9	9.464	10	0 48 39.95	2.0226	1 48 21.1	10.308
11	23 15 1.42	1.9747	6 3 28.1	9.498	11	0 50 41.36	2.0245	1 58 39.6	10.307
12	23 16 59.91	1.9749	5 53 57.2	9.531	12	0 52 42.89	2.0264	2 8 58.0	10.306
13	23 18 58.42	1.9752	5 44 24.3	9.564	13	0 54 44.53	2.0283	2 19 16.2	10.303
14	23 20 56.94	1.9755	5 34 49.5	9.596	14	0 56 46.28	2.0303	2 29 34.2	10.298
15	23 22 55.48	1.9758	5 25 12.7	9.628	15	0 58 48.15	2.0323	2 39 52.0	10.294
16	23 24 54.04	1.9763	5 15 34.1	9.659	16	1 0 50.15	2.0343	2 50 9.5	10.289
17	23 26 52.63	1.9767	5 5 53.6	9.689	17	1 2 52.27	2.0363	3 0 26.6	10.283
18	23 28 51.24	1.9772	4 56 11.4	9.718	18	1 4 54.51	2.0384	3 10 43.4	10.276
19	23 30 49.88	1.9777	4 46 27.5	9.747	19	1 6 56.88	2.0406	3 20 59.7	10.268
20	23 32 48.56	1.9782	4 36 41.8	9.775	20	1 8 59.38	2.0427	3 31 15.5	10.259
21	23 34 47.26	1.9787	4 26 54.4	9.803	21	1 11 2.01	2.0449	3 41 30.7	10.249
22	23 36 46.00	1.9793	4 17 5.4	9.830	22	1 13 4.77	2.0472	3 51 45.4	10.238
23	23 38 44.78	1.9799	4 7 14.8	9.856	23	1 15 7.67	2.0495	4 1 59.4	10.227
24	23 40 43.59	1.9805	S. 3° 57' 22.7"	9.882	24	1 17 10.71	2.0518	N. 4 12 12.6	10.215

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
WEDNESDAY 25.					FRIDAY 27.				
0	1 17 10.71	2.0618	N. 4 12 12.6	10.315	0	2 58 55.86	2.1986	N. 11 50 51.6	8.331
1	1 19 13.89	2.0542	4 22 25.1	10.303	1	3 1 7.88	2.2022	11 59 21.7	8.472
2	1 21 17.21	2.0566	4 32 36.8	10.187	2	3 3 20.12	2.2056	12 7 48.3	8.412
3	1 23 20.67	2.0689	4 42 47.6	10.173	3	3 5 32.58	2.2085	12 16 11.3	8.362
4	1 25 24.28	2.0613	4 52 57.4	10.166	4	3 7 45.26	2.2121	12 24 30.6	8.290
5	1 27 28.04	2.0638	5 3 6.3	10.139	5	3 9 58.16	2.2168	12 32 46.2	8.238
6	1 29 31.94	2.0653	5 13 14.1	10.121	6	3 12 11.28	2.2206	12 40 58.0	8.166
7	1 31 36.00	2.0689	5 23 20.9	10.103	7	3 14 24.62	2.2243	12 49 6.0	8.161
8	1 33 40.21	2.0718	5 33 26.5	10.083	8	3 16 38.19	2.2279	12 57 10.1	8.086
9	1 35 44.58	2.0741	5 43 30.9	10.063	9	3 18 51.98	2.2317	13 5 10.2	7.988
10	1 37 49.10	2.0787	5 53 34.1	10.042	10	3 21 5.99	2.2354	13 13 6.3	7.900
11	1 39 53.78	2.0794	6 3 36.0	10.020	11	3 23 20.23	2.2392	13 20 58.3	7.832
12	1 41 58.63	2.0821	6 13 36.5	9.997	12	3 25 34.69	2.2429	13 28 46.2	7.762
13	1 44 3.64	2.0849	6 23 35.6	9.973	13	3 27 49.38	2.2467	13 36 29.9	7.692
14	1 46 8.82	2.0877	6 33 33.2	9.948	14	3 30 4.29	2.2504	13 44 9.3	7.621
15	1 48 14.17	2.0906	6 43 29.3	9.923	15	3 32 19.43	2.2542	13 51 44.4	7.549
16	1 50 19.68	2.0933	6 53 23.8	9.896	16	3 34 34.80	2.2580	13 59 15.2	7.476
17	1 52 25.36	2.0962	7 3 16.7	9.867	17	3 36 50.39	2.2618	14 6 41.5	7.402
18	1 54 31.22	2.0991	7 13 7.9	9.836	18	3 39 6.21	2.2656	14 14 3.4	7.327
19	1 56 37.26	2.1021	7 22 57.3	9.806	19	3 41 22.26	2.2693	14 21 20.7	7.251
20	1 58 43.47	2.1050	7 32 44.9	9.777	20	3 43 38.53	2.2730	14 28 33.5	7.173
21	2 0 49.86	2.1080	7 42 30.7	9.746	21	3 45 55.03	2.2768	14 35 41.6	7.096
22	2 2 56.43	2.1110	7 52 14.5	9.714	22	3 48 11.75	2.2805	14 42 44.9	7.016
23	2 5 3.18	2.1141	N. 8 1 56.4	9.681	23	3 50 28.70	2.2843	N. 14 49 43.5	6.936
THURSDAY 26.					SATURDAY 28.				
0	2 7 10.12	2.1173	N. 8 11 36.2	9.646	0	3 52 45.87	2.2880	N. 14 56 37.3	6.856
1	2 9 17.25	2.1203	8 21 13.9	9.611	1	3 55 3.27	2.2918	15 3 26.2	6.774
2	2 11 24.56	2.1234	8 30 49.5	9.574	2	3 57 20.89	2.2956	15 10 10.2	6.691
3	2 13 32.06	2.1266	8 40 22.9	9.537	3	3 59 38.74	2.2993	15 16 49.2	6.608
4	2 15 39.75	2.1298	8 49 54.0	9.499	4	4 1 56.81	2.3030	15 23 23.2	6.523
5	2 17 47.63	2.1330	8 59 22.8	9.460	5	4 4 15.10	2.3068	15 29 52.1	6.438
6	2 19 55.71	2.1362	9 8 49.2	9.420	6	4 6 33.62	2.3105	15 36 15.8	6.351
7	2 22 3.98	2.1395	9 18 13.2	9.379	7	4 8 52.36	2.3141	15 42 34.3	6.264
8	2 24 12.45	2.1428	9 27 34.7	9.336	8	4 11 11.31	2.3178	15 48 47.5	6.176
9	2 26 21.11	2.1461	9 36 53.6	9.293	9	4 13 30.49	2.3215	15 54 55.4	6.087
10	2 28 29.98	2.1494	9 46 9.9	9.249	10	4 15 49.89	2.3252	16 0 58.0	5.997
11	2 30 39.05	2.1528	9 55 23.6	9.205	11	4 18 9.51	2.3289	16 6 55.1	5.906
12	2 32 48.32	2.1562	10 4 34.5	9.159	12	4 20 29.34	2.3323	16 12 46.8	5.815
13	2 34 57.80	2.1596	10 13 42.7	9.112	13	4 22 49.39	2.3359	16 18 32.9	5.723
14	2 37 7.48	2.1630	10 22 48.0	9.064	14	4 25 9.65	2.3395	16 24 13.5	5.630
15	2 39 17.37	2.1665	10 31 50.4	9.016	15	4 27 30.13	2.3431	16 29 48.5	5.536
16	2 41 27.46	2.1700	10 40 49.8	8.966	16	4 29 50.82	2.3466	16 35 17.8	5.440
17	2 43 37.76	2.1735	10 49 46.2	8.914	17	4 32 11.72	2.3501	16 40 41.3	5.344
18	2 45 48.28	2.1770	10 58 39.5	8.862	18	4 34 32.83	2.3536	16 45 59.1	5.247
19	2 47 59.01	2.1806	11 7 29.7	8.810	19	4 36 54.15	2.3570	16 51 11.0	5.150
20	2 50 9.95	2.1841	11 16 16.7	8.756	20	4 39 15.67	2.3604	16 56 17.1	5.052
21	2 52 21.10	2.1877	11 25 0.5	8.702	21	4 41 37.40	2.3638	17 1 17.2	4.953
22	2 54 32.47	2.1913	11 33 40.9	8.646	22	4 43 59.33	2.3672	17 6 11.4	4.853
23	2 56 44.06	2.1949	11 42 18.0	8.589	23	4 46 21.47	2.3706	17 10 59.6	4.753
24	2 58 55.86	2.1985	N. 11 50 51.6	8.531	24	4 48 43.80	2.3739	N. 17 15 41.7	4.650

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SUNDAY 29.					TUESDAY 31.				
0	4 48 43.80	2.3728	N.17° 15' 41.7	4.650	0	6 45 39.64	2.4776	N.18° 50' 10.9	0.887
1	4 51 6.33	2.3772	17 20 17.7	4.548	1	6 48 8.31	2.4788	18 49 14.0	1.011
2	4 53 29.06	2.3804	17 24 47.5	4.446	2	6 50 37.03	2.4789	18 48 9.6	1.184
3	4 55 51.98	2.3836	17 29 11.2	4.342	3	6 53 5.78	2.4796	18 46 57.8	1.387
4	4 58 15.09	2.3868	17 33 28.6	4.237	4	6 55 34.57	2.4800	18 45 38.7	1.580
5	5 0 38.39	2.3899	17 37 39.7	4.132	5	6 58 3.38	2.4804	18 44 12.2	1.808
6	5 3 1.88	2.3930	17 41 44.5	4.026	6	7 0 32.22	2.4808	18 42 38.3	1.926
7	5 5 25.55	2.3961	17 45 42.9	3.919	7	7 3 1.08	2.4812	18 40 57.0	1.760
8	5 7 49.41	2.3991	17 49 34.8	3.812	8	7 5 29.96	2.4814	18 39 8.3	1.878
9	5 10 13.45	2.4021	17 53 20.3	3.704	9	7 7 58.86	2.4816	18 37 12.2	1.996
10	5 12 37.66	2.4060	17 56 59.3	3.596	10	7 10 27.76	2.4817	18 35 8.8	2.119
11	5 15 2.04	2.4078	18 0 31.8	3.486	11	7 12 56.67	2.4818	18 32 58.0	2.241
12	5 17 26.60	2.4107	18 3 57.7	3.376	12	7 15 25.58	2.4818	18 30 39.9	2.364
13	5 19 51.33	2.4138	18 7 17.0	3.266	13	7 17 54.49	2.4817	18 28 14.4	2.487
14	5 22 16.23	2.4168	18 10 29.6	3.156	14	7 20 23.39	2.4816	18 25 41.5	2.609
15	5 24 41.29	2.4191	18 13 35.6	3.043	15	7 22 52.28	2.4814	18 23 1.4	2.730
16	5 27 6.52	2.4218	18 16 34.8	2.931	16	7 25 21.16	2.4811	18 20 13.9	2.852
17	5 29 31.91	2.4244	18 19 27.2	2.818	17	7 27 50.02	2.4808	18 17 19.1	2.973
18	5 31 57.45	2.4268	18 22 12.9	2.705	18	7 30 18.86	2.4804	18 14 17.1	3.095
19	5 34 23.14	2.4294	18 24 51.8	2.591	19	7 32 47.67	2.4800	18 11 7.8	3.216
20	5 36 48.98	2.4319	18 27 23.8	2.476	20	7 35 16.46	2.4796	18 7 51.2	3.337
21	5 39 14.97	2.4343	18 29 48.9	2.361	21	7 37 45.22	2.4790	18 4 27.4	3.457
22	5 41 41.10	2.4367	18 32 7.1	2.245	22	7 40 13.94	2.4784	18 0 56.4	3.577
23	5 44 7.37	2.4390	N.18 34 18.3	2.129	23	7 42 42.62	2.4777	N.17 57 18.2	3.696
MONDAY 30.					WEDNESDAY, APRIL 1.				
0	5 46 33.78	2.4413	N.18 36 22.6	2.013	0	7 45 11.26	2.4769	N.17 53 32.9	3.815
1	5 49 0.32	2.4436	18 38 19.8	1.896	PHASES OF THE MOON.				
2	5 51 27.00	2.4456	18 40 10.0	1.778					
3	5 53 53.80	2.4477	18 41 53.1	1.660					
4	5 56 20.73	2.4497	18 43 29.2	1.542					
5	5 58 47.77	2.4517	18 44 58.1	1.423	<div>☾ First Quarter, . . .<div>d</div><div>h</div><div>m</div><div>1</div><div>16</div><div>48.9</div></div> <div>☉ Full Moon, . . .<div>8</div><div>8</div><div>22.2</div></div> <div>☾ Last Quarter, . . .<div>15</div><div>15</div><div>28.7</div></div> <div>● New Moon, . . .<div>23</div><div>18</div><div>59.1</div></div> <div>☾ First Quarter, . . .<div>31</div><div>0</div><div>25.6</div></div>				
6	6 1 14.93	2.4536	18 46 19.9	1.304					
7	6 3 42.20	2.4555	18 47 34.5	1.184					
8	6 6 9.59	2.4573	18 48 42.0	1.064					
9	6 8 37.08	2.4590	18 49 42.3	0.944	<div>☾ Perigee,<div>d</div><div>h</div><div>8</div><div>11.2</div></div> <div>☾ Apogee,<div>18</div><div>8.5</div></div>				
10	6 11 4.68	2.4607	18 50 35.3	0.824					
11	6 13 32.37	2.4623	18 51 21.1	0.703					
12	6 16 0.16	2.4638	18 51 59.6	0.582					
13	6 18 28.04	2.4653	18 52 30.8	0.460					
14	6 20 56.00	2.4667	18 52 54.8	0.338					
15	6 23 24.05	2.4681	18 53 11.5	0.216					
16	6 25 52.18	2.4694	18 53 20.8	0.094					
17	6 28 20.38	2.4707	18 53 22.8	0.023					
18	6 30 48.66	2.4719	18 53 17.5	0.150					
19	6 33 17.01	2.4730	18 53 4.8	0.273					
20	6 35 45.42	2.4740	18 52 44.8	0.395					
21	6 38 13.89	2.4750	18 52 17.4	0.518					
22	6 40 42.42	2.4759	18 51 42.6	0.641					
23	6 43 11.01	2.4768	18 51 0.4	0.764					
24	6 45 39.64	2.4776	N.18 50 10.9	0.887					

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Dist.	IIIh.	P. L. of Dist.	VIh.	P. L. of Dist.	IXh.	P. L. of Dist.
1	SUN W.	81° 7' 10"	2902	82° 41' 35"	2790	84° 16' 16"	2778	85° 51' 15"	2763
	α Pegasi W.	73 43 28	2780	75 18 10	2772	76 53 14	2766	78 28 39	2740
	Venus W.	44 28 22	2983	46 1 2	2870	47 33 59	2866	49 7 14	2843
	Pollux E.	50 25 59	2894	48 46 56	2880	47 7 46	2884	45 28 29	2880
	Regulus E.	85 45 5	2472	84 3 12	2460	82 21 2	2448	80 38 35	2436
2	SUN W.	93 50 28	2907	95 27 12	2684	97 4 13	2672	98 41 31	2657
	α Pegasi W.	86 30 50	2669	88 8 12	2666	89 45 52	2643	91 23 49	2632
	Venus W.	56 57 56	2774	58 32 58	2780	60 8 18	2747	61 43 56	2733
	α Arietis W.	42 53 11	2683	44 30 14	2682	46 7 59	2634	47 46 22	2596
	Regulus E.	72 2 1	2374	70 17 49	2362	68 33 20	2360	66 48 34	2337
	Spica E.	125 29 32	2407	123 46 8	2394	122 2 25	2381	120 18 23	2367
3	SUN W.	106 52 29	2893	108 31 33	2861	110 10 54	2860	111 50 32	2857
	α Pegasi W.	99 37 14	2882	101 16 34	2874	102 56 4	2860	104 35 45	2861
	Venus W.	69 46 33	2667	71 23 57	2684	73 1 39	2642	74 39 37	2629
	α Arietis W.	56 6 55	2482	57 48 34	2482	59 30 40	2444	61 13 12	2426
	Aldebaran W.	22 8 39	2277	23 55 13	2266	25 42 3	2264	27 29 10	2243
	Regulus E.	58 0 17	2278	56 13 45	2266	54 26 56	2266	52 39 51	2243
	Spica E.	111 33 28	2303	109 47 33	2291	108 1 21	2279	106 14 51	2266
4	SUN W.	120 12 46	2490	121 54 0	2480	123 35 28	2479	125 17 11	2470
	α Pegasi W.	112 55 47	2645	114 35 57	2646	116 16 6	2648	117 56 12	2652
	Venus W.	82 53 34	2672	84 33 8	2661	86 12 57	2661	87 53 0	2640
	α Arietis W.	69 51 49	2350	71 36 36	2336	73 21 43	2324	75 7 8	2313
	Aldebaran W.	36 28 52	2190	38 17 35	2179	40 6 34	2170	41 55 46	2161
	Regulus E.	43 40 19	2191	41 51 38	2182	40 2 43	2172	38 13 33	2163
	Spica E.	97 18 9	2213	95 30 1	2202	93 41 37	2194	91 53 0	2184
5	Venus W.	96 16 28	2496	97 57 44	2491	99 39 10	2484	101 20 45	2479
	α Arietis W.	83 58 8	2264	85 45 0	2267	87 32 3	2280	89 19 16	2245
	Aldebaran W.	51 5 5	2121	52 55 32	2116	54 46 9	2108	56 36 56	2103
	Regulus E.	29 4 34	2126	27 14 13	2118	25 23 42	2113	23 33 2	2108
	Spica E.	82 46 37	2146	80 56 46	2138	79 6 45	2132	77 16 35	2127
	Saturn E.	126 33 4	2137	124 43 1	2129	122 52 46	2122	121 2 21	2116
6	Venus W.	109 50 28	2456	111 32 40	2456	113 14 55	2454	114 57 13	2454
	α Arietis W.	98 17 5	2227	100 4 52	2227	101 52 39	2227	103 40 27	2229
	Aldebaran W.	65 52 45	2082	67 44 12	2080	69 35 42	2077	71 27 16	2077
	Spica E.	68 4 1	2109	66 13 16	2107	64 22 28	2107	62 31 39	2107
	Saturn E.	111 48 13	2094	109 57 5	2091	108 5 52	2089	106 14 36	2088
	Antares E.	113 46 7	2108	111 56 36	2103	110 6 58	2100	108 17 15	2147
7	α Arietis W.	112 38 26	2249	114 25 40	2258	116 12 42	2268	117 59 32	2277
	Aldebaran W.	80 45 12	2080	82 36 42	2082	84 28 9	2086	86 19 30	2089
	Pollux W.	37 56 1	2264	39 42 53	2263	41 30 2	2244	43 17 24	2238
	Spica E.	53 17 52	2117	51 27 18	2121	49 36 51	2127	47 46 33	2133
	Saturn E.	96 58 6	2090	95 6 52	2093	93 15 42	2096	91 24 36	2100
	Antares E.	99 8 2	2145	97 18 12	2147	95 28 25	2150	93 38 42	2154
8	Aldebaran W.	95 34 28	2118	97 24 59	2126	99 15 18	2134	101 5 25	2143
	Pollux W.	52 15 48	2229	54 3 32	2233	55 51 11	2236	57 38 45	2241
	Regulus W.	15 28 17	2128	17 18 33	2135	19 8 39	2141	20 58 35	2140
	Saturn E.	82 10 58	2129	80 20 43	2136	78 30 39	2145	76 40 48	2154
	Antares E.	84 31 55	2182	82 43 2	2192	80 54 22	2201	79 5 56	2210

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	SUN W.	87° 26' 31"	2780	89° 2' 4"	2737	90° 37' 55"	2724	92° 14' 3"	2711
	α Pegasi W.	80 4 26	2725	81 40 33	2710	83 17 0	2695	84 53 46	2682
	Venus W.	50 40 46	2628	52 14 37	2615	53 48 45	2601	55 23 12	2588
	Pollux E.	43 49 7	2577	42 9 41	2576	40 30 13	2576	38 50 45	2577
	Regulus E.	78 55 51	2424	77 12 50	2411	75 29 31	2399	73 45 53	2387
2	SUN W.	100 19 8	2645	101 57 2	2632	103 35 13	2619	105 13 42	2606
	α Pegasi W.	93 2 1	2621	94 40 28	2610	96 19 10	2600	97 58 5	2590
	Venus W.	63 19 52	2719	64 56 6	2706	66 32 38	2693	68 9 27	2681
	α Arietis W.	49 25 22	2671	51 4 57	2646	52 45 6	2624	54 25 46	2603
	Regulus E.	65 3 29	2326	63 18 7	2314	61 32 26	2302	59 46 31	2290
	Spica E.	118 34 1	2355	116 49 21	2341	115 4 22	2328	113 19 4	2316
3	SUN W.	113 30 26	2645	115 10 37	2633	116 51 4	2622	118 31 47	2610
	α Pegasi W.	106 15 34	2636	107 55 30	2621	109 35 32	2608	111 15 38	2596
	Venus W.	76 17 52	2617	77 56 24	2605	79 35 12	2594	81 14 15	2582
	α Arietis W.	62 56 9	2409	64 39 31	2394	66 23 15	2378	68 7 21	2363
	Aldebaran W.	29 16 34	2232	31 4 14	2220	32 52 11	2210	34 40 24	2200
	Regulus E.	43 45 12	2233	49 4 50	2222	47 16 55	2212	45 28 45	2201
	Spica E.	104 28 4	2256	102 41 0	2245	100 53 39	2234	99 6 2	2222
4	SUN W.	126 59 7	2460	128 41 17	2451	130 23 39	2443	132 6 13	2434
	α Pegasi W.	119 36 13	2556	121 16 6	2545	122 55 49	2535	124 35 18	2526
	Venus W.	89 33 17	2632	91 13 46	2622	92 54 29	2614	94 35 23	2606
	α Arietis W.	76 52 49	2301	78 38 47	2291	80 25 0	2281	82 11 27	2272
	Aldebaran W.	43 45 12	2152	45 34 52	2144	47 24 44	2136	49 14 49	2128
	Regulus E.	36 24 10	2155	34 34 34	2147	32 44 46	2139	30 54 46	2131
	Spica E.	90 4 8	2176	88 15 4	2167	86 25 47	2158	84 36 17	2152
5	Venus W.	103 2 28	2473	104 44 19	2468	106 26 17	2455	108 8 20	2451
	α Arietis W.	91 6 37	2230	92 54 6	2225	94 41 41	2222	96 29 21	2220
	Aldebaran W.	58 27 51	2097	60 18 55	2093	62 10 5	2088	64 1 22	2085
	Regulus E.	21 42 15	2104	19 51 22	2100	18 0 23	2098	16 9 21	2096
	Spica E.	75 26 17	2122	73 35 52	2118	71 45 20	2114	69 54 43	2111
	Saturn E.	119 11 47	2111	117 21 4	2106	115 30 14	2101	113 39 16	2098
6	Venus W.	116 39 31	2454	118 21 49	2454	120 4 7	2456	121 46 22	2458
	α Arietis W.	105 28 12	2231	107 15 54	2233	109 3 32	2238	110 51 3	2243
	Aldebaran W.	73 18 51	2076	75 10 28	2076	77 2 4	2077	78 53 39	2078
	Spica E.	60 40 50	2107	58 50 1	2109	56 59 15	2110	55 8 31	2113
	Saturn E.	104 23 19	2068	102 32 0	2067	100 40 41	2067	98 49 22	2068
	Antares E.	106 27 28	2146	104 37 38	2144	102 47 46	2143	100 57 53	2145
7	α Arietis W.	119 46 6	2388	121 32 23	2391	123 18 21	2316	125 3 58	2333
	Aldebaran W.	88 10 46	2094	90 1 54	2099	91 52 54	2105	93 43 46	2111
	Pollux W.	45 4 55	2233	46 52 34	2239	48 40 18	2229	50 28 3	2226
	Spica E.	45 56 24	2141	44 6 27	2149	42 16 42	2158	40 27 11	2169
	Saturn E.	89 33 37	2105	87 42 45	2109	85 52 0	2115	84 1 24	2122
	Antares E.	91 49 5	2159	89 59 35	2168	88 10 12	2169	86 20 58	2176
8	Aldebaran W.	102 55 18	2153	104 44 56	2163	106 34 20	2174	108 23 27	2184
	Pollux W.	59 26 12	2247	61 13 30	2253	63 0 38	2262	64 47 34	2270
	Regulus W.	22 48 20	2158	24 37 51	2167	26 27 8	2178	28 16 9	2188
	Saturn E.	74 51 11	2163	73 1 48	2173	71 12 40	2184	69 23 49	2195
	Antares E.	77 17 43	2221	75 29 47	2232	73 42 7	2244	71 54 45	2256

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Dist.	IIIh.	P. L. of Dist.	VIh.	P. L. of Dist.	IXh.	P. L. of Dist.
9	Aldebaran W.	110° 12' 18"	2196	112° 0' 51"	2208	113° 49' 6"	2221	115° 37' 2"	2236
	Pollux W.	66 34 18	2279	68 20 48	2289	70 7 3	2300	71 53 2	2311
	Regulus W.	30 4 55	2199	31 53 24	2212	33 41 34	2223	35 29 27	2237
	Saturn E.	67 35 14	2207	65 46 57	2219	63 58 59	2232	62 11 19	2246
	Antares E.	70 7 41	2270	68 20 58	2283	66 34 34	2299	64 48 33	2314
	α Aquilæ E.	116 15 10	2789	114 40 28	2784	113 5 39	2792	111 30 48	2792
10	Pollux W.	80 38 28	2279	82 22 33	2293	84 6 17	2409	85 49 39	2435
	Regulus W.	44 23 46	2208	46 9 34	2224	47 54 58	2239	49 40 0	2265
	Saturn E.	53 18 15	2220	51 32 44	2236	49 47 37	2263	48 2 54	2299
	Antares E.	56 4 24	2403	54 20 53	2422	52 37 50	2443	50 55 16	2466
	α Aquilæ E.	103 37 6	2906	102 2 45	2913	100 28 34	2926	98 54 38	2936
11	Pollux W.	94 20 39	2610	96 1 39	2627	97 42 14	2646	99 22 23	2664
	Regulus W.	58 19 14	2440	60 1 52	2457	61 44 6	2476	63 25 54	2492
	Saturn E.	39 25 30	2458	37 43 18	2477	36 1 33	2496	34 20 14	2516
	α Aquilæ E.	91 9 7	2909	89 37 0	2927	88 5 16	2946	86 33 55	2965
	Fomalhaut E.	124 41 41	2901	123 9 23	2900	121 37 4	2902	120 4 48	2906
12	Pollux W.	107 36 48	2658	109 14 24	2678	110 51 33	2697	112 28 17	2716
	Regulus W.	71 48 47	2581	73 28 8	2599	75 7 4	2616	76 45 37	2634
	α Aquilæ E.	79 3 33	3073	77 34 51	3099	76 6 39	3123	74 38 57	3148
	Fomalhaut E.	112 25 1	2940	110 53 33	2960	109 22 17	2981	107 51 15	2972
	SUN E.	132 15 8	2921	130 43 16	2939	129 11 47	2969	127 40 43	2977
13	Regulus W.	84 52 28	2719	86 28 43	2736	88 4 35	2763	89 40 5	2798
	Spica W.	31 41 11	2800	33 15 39	2809	34 49 55	2821	36 23 56	2831
	α Aquilæ E.	67 28 25	2989	66 4 1	2919	64 40 12	2931	63 17 0	2965
	Fomalhaut E.	100 19 47	3034	98 50 17	3049	97 21 5	3063	95 52 10	3077
	SUN E.	120 11 11	3070	118 42 25	3098	117 14 1	3106	115 45 58	3123
14	Regulus W.	97 32 31	2844	99 6 2	2868	100 39 15	2872	102 12 10	2886
	Spica W.	44 10 24	2890	45 42 56	2901	47 15 13	2912	48 47 16	2924
	α Aquilæ E.	56 30 52	3271	55 11 46	3213	53 53 25	3256	52 35 53	3204
	Fomalhaut E.	88 31 59	3180	87 4 50	3196	85 38 0	3190	84 11 27	3196
	SUN E.	108 30 51	3206	107 4 48	3220	105 39 2	3236	104 13 35	3250
15	Regulus W.	109 52 40	2948	111 24 0	2967	112 55 7	2988	114 26 0	2977
	Spica W.	56 23 56	2977	57 54 37	2988	59 25 5	2997	60 55 21	3006
	α Aquilæ E.	46 21 24	3984	45 9 29	4000	43 58 39	4126	42 49 1	4203
	Fomalhaut E.	77 3 14	3271	75 38 29	3287	74 14 2	3303	72 49 54	3318
	SUN E.	97 10 24	3316	95 46 31	3328	94 22 52	3340	92 59 27	3350
16	Spica W.	68 24 1	3046	69 53 17	3063	71 22 24	3080	72 51 23	3064
	Fomalhaut E.	65 53 42	3398	64 31 23	3415	63 9 23	3432	61 47 43	3449
	SUN E.	86 5 14	3398	84 42 55	3405	83 20 44	3413	81 58 42	3420
17	Spica W.	80 14 44	3087	81 43 9	3091	83 11 29	3094	84 39 46	3096
	Saturn W.	36 22 13	3082	37 50 45	3083	39 19 15	3086	40 47 43	3087
	Antares W.	35 12 51	3256	36 37 55	3246	38 3 10	3238	39 28 34	3220
	Fomalhaut E.	55 4 29	3546	53 44 56	3569	52 25 48	3592	51 7 5	3617
	SUN E.	75 10 18	3446	73 48 54	3461	72 27 35	3484	71 6 19	3466
18	Spica W.	92 0 39	3101	93 28 47	3101	94 56 55	3101	96 25 4	3106
	Saturn W.	48 9 44	3088	49 38 8	3087	51 6 33	3086	52 35 0	3084

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Dist.	XVh.	P. L. of Dist.	XVIIIh.	P. L. of Dist.	XXIh.	P. L. of Dist.
9	Aldebaran W.	117° 24' 38"	2246	119° 11' 54"	2262	120° 58' 49"	2277	122° 45' 23"	2291
	Pollux W.	73 38 45	2324	75 24 9	2337	77 9 15	2350	78 54 1	2364
	Regulus W.	37 17 0	2360	39 4 13	2364	40 51 5	2379	42 37 36	2393
	Saturn E.	60 24 0	2360	58 37 2	2374	56 50 24	2389	55 4 8	2394
	Antares E.	63 2 54	2331	61 17 39	2347	59 32 48	2365	57 48 23	2383
	α Aquilæ E.	109 55 56	2783	108 21 5	2786	106 46 19	2790	105 11 38	2797
10	Pollux W.	87 32 38	2441	89 15 14	2456	90 57 26	2475	92 39 15	2492
	Regulus W.	51 24 39	2473	53 8 54	2389	54 52 45	2406	56 36 12	2423
	Saturn E.	46 18 35	2387	44 34 41	2404	42 51 12	2422	41 8 8	2440
	Antares E.	49 13 13	2487	47 31 41	2510	45 50 42	2535	44 10 17	2560
	α Aquilæ E.	97 20 56	2648	95 47 31	2662	94 14 24	2676	92 41 35	2693
11	Pollux W.	101 2 8	2683	102 41 26	2691	104 20 19	2620	105 58 47	2640
	Regulus W.	65 7 18	2610	66 48 17	2627	68 28 52	2646	70 9 2	2664
	Saturn E.	32 39 23	2636	30 58 59	2656	29 19 3	2677	27 39 36	2698
	α Aquilæ E.	85 2 58	2688	83 32 27	2696	82 2 22	2627	80 32 43	2651
	Fomalhaut E.	118 32 36	2699	117 0 29	2616	115 28 30	2624	113 56 41	2631
12	Pollux W.	114 4 35	2737	115 40 26	2756	117 15 52	2775	118 50 52	2795
	Regulus W.	78 23 46	2652	80 1 31	2669	81 38 53	2686	83 15 52	2703
	α Aquilæ E.	73 11 46	3174	71 45 6	3202	70 18 59	3220	68 53 25	3238
	Fomalhaut E.	106 20 27	2983	104 49 53	2996	103 19 35	2999	101 49 33	3022
	SUN E.	126 10 2	2997	124 39 45	3015	123 9 51	3034	121 40 20	3062
13	Regulus W.	91 15 15	2784	92 50 4	2799	94 24 33	2815	95 58 42	2830
	Spica W.	37 57 43	2642	39 31 16	2664	41 4 34	2686	42 37 36	2677
	α Aquilæ E.	61 54 26	3419	60 32 31	3464	59 11 16	3492	57 50 43	3430
	Fomalhaut E.	94 23 32	3091	92 55 12	3106	91 27 10	3120	89 59 25	3136
	SUN E.	114 18 16	3140	112 50 55	3157	111 23 54	3173	109 57 13	3189
14	Regulus W.	103 44 48	2898	105 17 10	2911	106 49 15	2923	108 21 5	2936
	Spica W.	50 19 4	2936	51 50 37	2946	53 21 57	2967	54 53 3	2968
	α Aquilæ E.	51 19 10	3753	50 3 19	3806	48 48 23	3861	47 34 24	3919
	Fomalhaut E.	82 45 12	3211	81 19 16	3225	79 53 37	3241	78 28 16	3257
	SUN E.	102 48 25	3264	101 23 31	3278	99 58 54	3290	98 34 31	3304
15	Regulus W.	115 56 41	2987	117 27 10	2997	118 57 27	3005	120 27 34	3013
	Spica W.	62 25 26	3015	63 55 20	3024	65 25 3	3031	66 54 37	3039
	α Aquilæ E.	41 40 38	4289	40 33 35	4381	39 27 57	4483	38 23 50	4596
	Fomalhaut E.	71 26 3	3333	70 2 30	3360	68 39 16	3365	67 16 20	3381
	SUN E.	91 36 13	3361	90 13 12	3371	88 50 22	3380	87 27 43	3399
16	Spica W.	74 20 16	3070	75 49 2	3076	77 17 41	3080	78 46 15	3084
	Fomalhaut E.	60 26 22	3468	59 5 22	3487	57 44 43	3506	56 24 25	3525
	SUN E.	80 36 48	3427	79 15 2	3432	77 53 22	3437	76 31 47	3442
17	Spica W.	86 8 0	3098	87 36 12	3100	89 4 22	3101	90 32 31	3101
	Saturn W.	42 16 9	3087	43 44 34	3088	45 12 58	3089	46 41 21	3089
	Antares W.	40 54 8	3223	42 19 50	3216	43 45 40	3210	45 11 37	3204
	Fomalhaut E.	49 48 49	3643	48 31 1	3671	47 13 43	3702	45 56 58	3734
	SUN E.	69 45 6	3458	68 23 55	3461	67 2 47	3462	65 41 40	3463
18	Spica W.	97 53 14	3099	99 21 25	3096	100 49 39	3095	102 17 55	3092
	Saturn W.	54 3 29	3082	55 32 0	3081	57 0 33	3078	58 29 10	3074

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Dist.	IIIh.	P. L. of Dist.	VIh.	P. L. of Dist.	IXh.	P. L. of Dist.
18	Antares	W.	46° 37' 42"	3196	46° 3' 53"	3198	49° 30' 11"	3187	50° 56' 36"	3182
	Fomalhaut	E.	44 40 47	3770	43 25 14	3808	42 10 20	3851	40 56 10	3896
	SUN	E.	64 20 34	3463	62 59 29	3463	61 38 23	3463	60 17 17	3461
19	Spica	W.	103 46 14	3090	105 14 36	3087	106 43 2	3082	108 11 33	3079
	Saturn	W.	59 57 51	3071	61 26 36	3067	62 55 26	3063	64 24 21	3060
	Antares	W.	58 10 21	3153	59 37 27	3147	61 4 40	3140	62 32 1	3134
	SUN	E.	53 31 18	3460	52 9 58	3446	50 48 34	3442	49 27 5	3438
20	Spica	W.	115 35 20	3066	117 4 23	3061	118 33 33	3045	120 2 50	3040
	Saturn	W.	71 50 25	3081	73 19 59	3076	74 49 40	3019	76 19 29	3013
	Antares	W.	69 50 44	3100	71 18 54	3092	72 47 13	3085	74 15 41	3077
	SUN	E.	42 38 23	3412	41 16 20	3406	39 54 10	3400	38 31 53	3393
21	Saturn	W.	83 50 48	2975	85 21 32	2967	86 52 26	2959	88 23 30	2950
	Antares	W.	81 40 25	3036	83 9 51	3029	84 39 28	3020	86 9 16	3012
	SUN	E.	31 38 34	3368	30 15 29	3361	28 52 17	3344	27 28 56	3337
25	SUN	W.	14 43 18	3084	16 11 47	3068	17 40 40	3047	19 9 55	3030
	Aldebaran	E.	48 24 37	2678	46 47 28	2669	45 10 7	2660	43 32 34	2652
	Pollux	E.	92 24 18	2748	90 48 42	2739	89 12 54	2730	87 36 54	2721
	Regulus	E.	128 32 34	2679	126 55 26	2671	125 18 7	2661	123 40 35	2652
26	SUN	W.	26 40 36	2967	28 11 30	2956	29 42 38	2946	31 14 0	2936
	Aldebaran	E.	35 21 50	2608	33 43 6	2599	32 4 10	2591	30 25 3	2583
	Pollux	E.	79 34 4	2681	77 56 58	2673	76 19 41	2666	74 42 14	2656
	Regulus	E.	115 29 57	2609	113 51 14	2600	112 12 19	2592	110 33 13	2584
27	SUN	W.	38 53 58	2687	40 26 34	2677	41 59 22	2668	43 32 22	2659
	Pollux	E.	66 32 43	2626	64 54 24	2621	63 15 57	2615	61 37 22	2610
	Regulus	E.	102 14 53	2543	100 34 39	2536	98 54 15	2527	97 13 39	2520
28	SUN	W.	51 20 9	2616	52 54 16	2608	54 28 33	2600	56 3 1	2592
	Pollux	E.	53 23 0	2592	51 43 54	2589	50 4 44	2586	48 25 33	2586
	Regulus	E.	88 48 1	2482	87 6 22	2474	85 24 32	2467	83 42 32	2459
29	SUN	W.	63 57 59	2752	65 33 30	2744	67 9 11	2737	68 45 2	2729
	α Arietis	W.	39 56 56	2769	41 32 5	2759	43 7 53	2712	44 44 17	2687
	Venus	W.	23 2 48	2968	24 33 22	2956	26 4 31	2931	27 36 11	2909
	Regulus	E.	75 9 56	2428	73 26 54	2416	71 43 42	2409	70 0 20	2402
	Spica	E.	128 36 57	2460	126 54 47	2450	125 12 23	2442	123 29 48	2433
30	SUN	W.	76 46 48	2692	78 23 39	2684	80 0 40	2678	81 37 50	2670
	α Arietis	W.	52 53 51	2698	54 33 3	2673	56 12 37	2656	57 52 32	2643
	Venus	W.	35 20 45	2825	36 54 41	2811	38 28 54	2796	40 3 24	2787
	Aldebaran	W.	18 47 52	2367	20 32 14	2361	22 16 45	2354	24 1 26	2347
	Regulus	E.	61 21 2	2368	59 36 41	2362	57 52 11	2354	56 7 30	2348
	Spica	E.	114 54 0	2394	113 10 17	2387	111 26 24	2380	109 42 20	2373
31	SUN	W.	89 46 2	2636	91 24 8	2630	93 2 22	2623	94 40 46	2617
	α Arietis	W.	66 16 41	2482	67 58 20	2472	69 40 13	2462	71 22 19	2453
	Venus	W.	47 59 31	2736	49 35 24	2726	51 11 29	2717	52 47 46	2709
	Aldebaran	W.	32 47 15	2615	34 32 52	2609	36 18 39	2603	38 4 34	2597
	Regulus	E.	47 21 49	2616	45 36 13	2611	43 50 29	2604	42 4 35	2599
	Spica	E.	100 59 29	2389	99 14 26	2382	97 29 13	2376	95 43 52	2370

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Dist.	XVh.	P. L. of Dist.	XVIIIh.	P. L. of Dist.	XXIh.	P. L. of Dist.
18	Antares	W.	52° 23' 7"	3176	53° 49' 45"	3170	55° 16' 30"	3164	56° 43' 22"	3156
	Fomalhaut	E.	39 42 48	3048	38 30 17	4007	37 18 44	4070	36 8 13	4141
	Sun	E.	58 56 9	3480	57 35 0	3488	56 13 49	3486	54 52 35	3488
19	Spica	W.	109 40 8	3075	111 8 48	3071	112 37 33	3067	114 6 23	3061
	Saturn	W.	65 53 21	3053	67 22 28	3049	68 51 40	3043	70 20 59	3038
	Antares	W.	63 59 29	3137	65 27 6	3121	66 54 50	3114	68 22 43	3107
	Sun	E.	48 5 32	3433	46 43 53	3429	45 22 9	3423	44 0 19	3418
20	Spica	W.	121 32 13	3034	123 1 44	3028	124 31 22	3023	126 1 7	3017
	Saturn	W.	77 49 27	3005	79 19 33	2998	80 49 48	2990	82 20 13	2982
	Antares	W.	75 44 19	3069	77 13 6	3062	78 42 2	3054	80 11 8	3048
	Sun	E.	37 9 29	3386	35 46 57	3379	34 24 17	3373	33 1 29	3366
21	Saturn	W.	89 54 45	2942	91 26 11	2933	92 57 48	2924	94 29 36	2916
	Antares	W.	87 39 14	3003	89 9 23	2996	90 39 42	2988	92 10 13	2977
	Sun	E.	26 5 27	3330	24 41 50	3323	23 18 5	3317	21 54 13	3310
25	Sun	W.	20 39 30	3016	22 9 23	3003	23 39 32	2991	25 9 56	2978
	Aldebaran	E.	41 54 49	2643	40 16 52	2634	38 38 43	2626	37 0 22	2617
	Pollux	E.	86 0 42	2713	84 24 19	2704	82 47 45	2696	81 11 0	2688
	Regulus	E.	122 2 51	2644	120 24 56	2636	118 46 48	2628	117 8 28	2618
26	Sun	W.	32 45 34	2924	34 17 22	2915	35 49 22	2906	37 21 34	2896
	Aldebaran	E.	28 45 45	2674	27 6 15	2666	25 26 34	2659	23 46 42	2651
	Pollux	E.	73 4 38	2692	71 26 53	2684	69 48 58	2676	68 10 55	2668
	Regulus	E.	108 53 56	2678	107 14 27	2667	105 34 47	2659	103 54 55	2651
27	Sun	W.	45 5 33	2851	46 38 55	2842	48 12 29	2833	49 46 14	2825
	Pollux	E.	59 58 41	2606	58 19 54	2601	56 41 1	2596	55 2 3	2594
	Regulus	E.	95 32 53	2612	93 51 56	2604	92 10 48	2597	90 29 30	2589
28	Sun	W.	57 37 40	2784	59 12 29	2776	60 47 29	2768	62 22 39	2760
	Pollux	E.	46 46 21	2686	45 7 9	2680	43 27 58	2671	41 48 50	2664
	Regulus	E.	82 0 21	2482	80 18 0	2448	78 35 29	2437	76 52 47	2431
29	Sun	W.	70 21 3	2721	71 57 15	2714	73 33 36	2707	75 10 7	2699
	α Arietis	W.	46 21 14	2664	47 58 42	2643	49 36 39	2623	51 15 3	2608
	Venus	W.	29 8 19	2886	30 40 53	2871	32 13 49	2854	33 47 7	2838
	Regulus	E.	68 16 48	2896	66 33 7	2888	64 49 15	2881	63 5 13	2876
	Spica	E.	121 47 1	2426	120 4 3	2417	118 20 53	2410	116 37 32	2402
30	Sun	W.	83 15 10	2663	84 52 39	2657	86 30 17	2649	88 8 5	2643
	α Arietis	W.	59 32 46	2629	61 13 19	2616	62 54 10	2604	64 35 18	2593
	Venus	W.	41 38 9	2775	43 13 9	2765	44 48 23	2755	46 23 50	2744
	Aldebaran	W.	25 46 17	2340	27 31 18	2335	29 16 27	2326	31 1 46	2321
	Regulus	E.	54 22 41	2343	52 37 42	2335	50 52 33	2329	49 7 16	2322
	Spica	E.	107 58 6	2365	106 13 41	2359	104 29 7	2352	102 44 23	2345
31	Sun	W.	96 19 18	2611	97 57 58	2604	99 36 47	2599	101 15 44	2593
	α Arietis	W.	73 4 39	2444	74 47 11	2436	76 29 55	2428	78 12 50	2421
	Venus	W.	54 24 14	2701	56 0 52	2693	57 37 41	2686	59 14 41	2678
	Aldebaran	W.	39 50 38	2291	41 36 50	2285	43 23 11	2279	45 9 41	2274
	Regulus	E.	40 18 34	2293	38 32 24	2287	36 46 5	2281	34 59 39	2277
	Spica	E.	93 58 21	2314	92 12 42	2309	90 26 55	2302	88 40 59	2297

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S						Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, to be added to		Diff. for 1 hour.
		Apparent Right Ascension.		Diff. for 1 hour.	Apparent Declination.		Diff. for 1 hour.		Semi-diameter.	subtracted from Apparent Time.	
		^h ^m ^s	^s	[°] ['] ["]	["]	[°] ['] ["]	["]	['] ["]	^s	^m ^s	^s
Wed.	1	0 44 18.63	9.101	N. 4 45 54.5	57.73	16 1.92	64.51	3 48.65	0.755		
Thur.	2	0 47 57.06	9.105	5 8 57.0	57.50	16 1.65	64.53	3 30.58	0.751		
Fri.	3	0 51 35.61	9.111	5 31 54.1	57.27	16 1.38	64.55	3 12.63	0.745		
Sat.	4	0 55 14.31	9.118	5 54 45.2	57.02	16 1.11	64.58	2 54.82	0.738		
Sun.	5	0 58 53.17	9.125	6 17 30.2	56.76	16 0.84	64.61	2 37.17	0.730		
Mon.	6	1 2 32.20	9.133	6 40 8.7	56.48	16 0.56	64.64	2 19.71	0.722		
Tues.	7	1 6 11.44	9.142	7 2 40.3	56.19	16 0.29	64.67	2 2.45	0.713		
Wed.	8	1 9 50.93	9.152	7 25 4.7	55.88	16 0.02	64.70	1 45.43	0.703		
Thur.	9	1 13 30.69	9.163	7 47 21.6	55.56	15 59.75	64.74	1 28.69	0.692		
Fri.	10	1 17 10.74	9.174	8 9 30.7	55.22	15 59.47	64.78	1 12.23	0.681		
Sat.	11	1 20 51.07	9.187	8 31 31.5	54.87	15 59.20	64.82	0 56.05	0.669		
Sun.	12	1 24 31.68	9.200	8 53 23.9	54.51	15 58.92	64.87	0 40.15	0.656		
Mon.	13	1 28 12.60	9.214	9 15 7.6	54.14	15 58.65	64.92	0 24.56	0.643		
Tues.	14	1 31 53.87	9.229	9 36 42.2	53.75	15 58.37	64.97	0 9.32	0.628		
Wed.	15	1 35 35.51	9.245	9 58 7.3	53.35	15 58.10	65.02	0 5.55	0.612		
Thur.	16	1 39 17.55	9.261	10 19 22.6	52.94	15 57.82	65.08	0 20.03	0.595		
Fri.	17	1 42 59.98	9.278	10 40 27.9	52.51	15 57.55	65.13	0 34.11	0.578		
Sat.	18	1 46 42.82	9.295	11 1 22.8	52.07	15 57.28	65.19	0 47.78	0.561		
Sun.	19	1 50 26.08	9.313	11 22 6.9	51.61	15 57.01	65.25	1 1.04	0.544		
Mon.	20	1 54 9.77	9.331	11 42 39.8	51.14	15 56.75	65.31	1 13.87	0.526		
Tues.	21	1 57 53.90	9.349	12 3 1.0	50.65	15 56.49	65.37	1 26.26	0.507		
Wed.	22	2 1 38.48	9.368	12 23 10.5	50.15	15 56.24	65.44	1 38.21	0.488		
Thur.	23	2 5 23.51	9.387	12 43 7.9	49.64	15 55.99	65.51	1 49.70	0.469		
Fri.	24	2 9 9.00	9.407	13 2 52.8	49.11	15 55.74	65.58	2 0.73	0.450		
Sat.	25	2 12 54.96	9.426	13 22 24.9	48.57	15 55.49	65.65	2 11.29	0.430		
Sun.	26	2 16 41.40	9.446	13 41 43.8	48.02	15 55.25	65.72	2 21.37	0.410		
Mon.	27	2 20 28.32	9.466	14 0 49.3	47.45	15 55.01	65.79	2 30.97	0.390		
Tues.	28	2 24 15.74	9.487	14 19 40.9	46.86	15 54.77	65.87	2 40.08	0.369		
Wed.	29	2 28 3.67	9.508	14 38 18.2	46.26	15 54.53	65.94	2 48.69	0.348		
Thur.	30	2 31 52.10	9.530	14 56 41.0	45.64	15 54.30	66.02	2 56.79	0.326		
Fri.	31	2 35 41.05	9.551	N. 15 14 48.9	45.02	15 54.07	66.10	3 4.37	0.305		

NOTE. — Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be subtracted from added to Mean Time.	Diff. for 1 hour.	Sidereal Time.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.			
		^h ^m ^s	^s	[°] ['] ["]	["]	^m ^s	^s	^h ^m ^s
Wed.	1	0 44 18.05	9.101	N. 4 45 50.9	57.73	3 48.70	0.755	0 40 29.35
Thur.	2	0 47 56.52	9.105	5 8 53.7	57.50	3 30.62	0.751	0 44 25.90
Fri.	3	0 51 35.12	9.111	5 31 51.0	57.27	3 12.67	0.745	0 48 22.45
Sat.	4	0 55 13.86	9.118	5 54 42.5	57.02	2 54.86	0.738	0 52 19.00
Sun.	5	0 58 52.77	9.125	6 17 27.8	56.76	2 37.22	0.730	0 56 15.55
Mon.	6	1 2 31.85	9.133	6 40 6.5	56.48	2 19.74	0.722	1 0 12.11
Tues.	7	1 6 11.14	9.142	7 2 38.3	56.19	2 2.48	0.713	1 4 8.66
Wed.	8	1 9 50.67	9.152	7 25 3.0	55.88	1 45.45	0.703	1 8 5.22
Thur.	9	1 13 30.47	9.163	7 47 20.3	55.56	1 28.71	0.692	1 12 1.76
Fri.	10	1 17 10.56	9.174	8 9 29.6	55.22	1 12.24	0.681	1 15 58.32
Sat.	11	1 20 50.93	9.187	8 31 30.7	54.87	0 56.06	0.669	1 19 54.87
Sun.	12	1 24 31.58	9.200	8 53 23.3	54.51	0 40.16	0.656	1 23 51.42
Mon.	13	1 28 12.54	9.214	9 15 7.2	54.14	0 24.57	0.643	1 27 47.97
Tues.	14	1 31 53.85	9.229	9 36 42.0	53.75	0 9.32	0.628	1 31 44.53
Wed.	15	1 35 35.53	9.245	9 58 7.4	53.35	0 5.55	0.612	1 35 41.08
Thur.	16	1 39 17.60	9.261	10 19 23.0	52.94	0 20.03	0.595	1 39 37.63
Fri.	17	1 43 0.07	9.278	10 40 28.4	52.51	0 34.12	0.578	1 43 34.19
Sat.	18	1 46 42.95	9.295	11 1 23.3	52.07	0 47.79	0.561	1 47 30.74
Sun.	19	1 50 26.24	9.313	11 22 7.8	51.61	1 1.05	0.544	1 51 27.29
Mon.	20	1 54 9.96	9.331	11 42 40.8	51.14	1 13.88	0.526	1 55 23.84
Tues.	21	1 57 54.12	9.349	12 3 2.2	50.65	1 26.28	0.507	1 59 20.40
Wed.	22	2 1 38.73	9.368	12 23 11.9	50.15	1 38.22	0.488	2 3 16.95
Thur.	23	2 5 23.79	9.387	12 43 9.4	49.64	1 49.71	0.469	2 7 13.50
Fri.	24	2 9 9.31	9.407	13 2 54.5	49.11	2 0.75	0.450	2 11 10.06
Sat.	25	2 12 55.30	9.426	13 22 26.7	48.57	2 11.31	0.430	2 15 6.61
Sun.	26	2 16 41.77	9.446	13 41 45.7	48.02	2 21.39	0.410	2 19 3.16
Mon.	27	2 20 28.72	9.466	14 0 51.2	47.45	2 31.00	0.390	2 22 59.72
Tues.	28	2 24 16.17	9.487	14 19 42.9	46.86	2 40.10	0.369	2 26 56.27
Wed.	29	2 28 4.12	9.508	14 38 20.4	46.26	2 48.71	0.348	2 30 52.83
Thur.	30	2 31 52.57	9.530	14 56 43.3	45.64	2 56.81	0.326	2 34 49.38
Fri.	31	2 35 41.54	9.551	N. 15 14 51.2	45.02	3 4.39	0.305	2 38 45.93

NOTE. — The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

AT GREENWICH MEAN NOON.

AT GREENWICH MEAN NOON.									
Day of the Month.	Day of the Year.	THE SUN'S					Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal Oh.
		True LONGITUDE.		Diff. for 1 hour.	LATITUDE.				
		λ	λ'						
1	92	12° 3' 0.7"	2 56.7	147.79	-0.25	0.0000329	51.1	23 15 41.39	
2	93	13 2 6.4	2 2.3	147.69	-0.13	.0001556	51.2	23 11 45.48	
3	94	14 1 9.8	1 5.6	147.59	0.00	.0002785	51.2	23 7 49.57	
4	95	15 0 11.0	0 6.7	147.50	+0.13	.0004014	51.3	23 3 53.67	
5	96	15 59 9.9	59 5.5	147.41	0.26	.0005246	51.4	22 59 57.74	
6	97	16 58 6.6	58 2.1	147.32	0.39	.0006481	51.6	22 56 1.85	
7	98	17 57 1.2	56 56.6	147.23	0.51	.0007721	51.8	22 52 5.94	
8	99	18 55 53.9	55 49.2	147.15	0.60	.0008964	51.9	22 48 10.03	
9	100	19 54 44.7	54 39.9	147.07	0.66	.0010210	52.0	22 44 14.13	
10	101	20 53 33.5	53 28.6	146.99	0.70	.0011458	52.0	22 40 18.22	
11	102	21 52 20.5	52 15.5	146.91	0.71	.0012707	52.0	22 36 22.31	
12	103	22 51 5.7	51 0.6	146.84	0.68	.0013956	52.0	22 32 26.41	
13	104	23 49 49.1	49 43.9	146.77	0.63	.0015202	51.9	22 28 30.50	
14	105	24 48 30.9	48 25.6	146.70	0.55	.0016445	51.7	22 24 34.59	
15	106	25 47 11.0	47 5.6	146.63	0.45	.0017684	51.5	22 20 38.69	
16	107	26 45 49.4	45 43.9	146.56	0.33	.0018916	51.2	22 16 42.78	
17	108	27 44 26.1	44 20.5	146.49	0.20	.0020140	50.8	22 12 46.87	
18	109	28 43 1.2	42 55.5	146.41	+0.07	.0021354	50.4	22 8 50.97	
19	110	29 41 34.5	41 28.7	146.33	-0.06	.0022557	49.9	22 4 55.06	
20	111	30 40 6.0	40 0.1	146.27	0.17	.0023747	49.3	22 0 59.15	
21	112	31 38 35.7	38 29.7	146.20	0.26	.0024924	48.8	21 57 3.25	
22	113	32 37 3.6	36 57.5	146.12	0.34	.0026087	48.2	21 53 7.34	
23	114	33 35 29.7	35 23.5	146.04	0.39	.0027236	47.6	21 49 11.44	
24	115	34 33 53.8	33 47.5	145.96	0.41	.0028371	47.0	21 45 15.53	
25	116	35 32 15.9	32 9.5	145.88	0.39	.0029492	46.4	21 41 19.62	
26	117	36 30 36.1	30 29.6	145.79	0.34	.0030600	45.8	21 37 23.72	
27	118	37 28 54.2	28 47.6	145.71	0.27	.0031695	45.3	21 33 27.81	
28	119	38 27 10.2	27 3.5	145.62	0.18	.0032777	44.8	21 29 31.90	
29	120	39 25 24.2	25 17.4	145.54	-0.06	.0033847	44.3	21 25 35.98	
30	121	40 23 36.3	23 29.3	145.45	+0.07	.0034907	43.9	21 21 40.07	
31	122	41 21 46.4	21 39.3	145.37	+0.21	0.0035956	43.5	21 17 44.16	

NOTE: λ corresponds to the true equinox of the date, λ' to the mean equinox of January 0d.

NOTE: λ corresponds to the true equinox of the date, λ' to the mean equinox of January 0d.

GREENWICH MEAN TIME.

THE MOON'S

THE MOON'S									
Day of the Month.	SEMI- DIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	
1	16' 12.8	16' 14.8	59' 28.6	+0.66	59' 30.9	+0.55	7 ^h 21.7 ^m	2.40	8.2
2	16 16.3	16 17.4	59 36.7	0.41	59 40.7	+0.24	8 18.7	2.35	9.2
3	16 17.9	16 17.8	59 42.6	+0.06	59 42.2	-0.13	9 14.4	2.29	10.2
4	16 17.1	16 15.6	59 39.3	-0.34	59 33.9	0.56	10 8.4	2.22	11.2
5	16 13.4	16 10.5	59 25.9	0.78	59 15.2	0.99	11 0.9	2.16	12.2
6	16 6.9	16 2.7	59 2.0	1.19	58 46.5	1.38	11 52.3	2.12	13.2
7	15 57.9	15 52.7	58 28.9	1.54	58 9.6	1.66	12 43.0	2.10	14.2
8	15 47.0	15 41.1	57 49.0	1.76	57 27.4	1.82	13 33.3	2.09	15.2
9	15 35.1	15 29.1	57 5.4	1.84	56 43.2	1.83	14 23.4	2.09	16.2
10	15 23.2	15 17.5	56 21.4	1.78	56 0.5	1.70	15 13.4	2.08	17.2
11	15 12.1	15 7.1	55 40.7	1.59	55 22.4	1.45	16 3.1	2.06	18.2
12	15 2.6	14 58.6	55 5.8	1.30	54 51.3	1.12	16 52.2	2.03	19.2
13	14 55.3	14 52.6	54 39.0	0.93	54 29.1	0.72	17 40.5	1.99	20.2
14	14 50.6	14 49.3	54 21.7	0.51	54 16.9	-0.30	18 27.8	1.96	21.2
15	14 48.7	14 48.8	54 14.7	-0.08	54 15.1	+0.14	19 14.0	1.91	22.2
16	14 49.6	14 51.1	54 18.0	+0.35	54 23.4	0.55	19 59.4	1.88	23.2
17	14 53.2	14 55.9	54 31.3	0.74	54 41.3	0.92	20 44.2	1.86	24.2
18	14 59.2	15 3.0	54 53.3	1.08	55 7.2	1.22	21 28.8	1.86	25.2
19	15 7.2	15 11.7	55 22.7	1.34	55 39.4	1.43	22 13.8	1.89	26.2
20	15 16.5	15 21.5	55 57.1	1.50	56 15.4	1.54	22 59.8	1.96	27.2
21	15 26.6	15 31.7	56 34.1	1.56	56 52.8	1.55	23 47.5	2.03	28.2
22	15 36.7	15 41.6	57 11.3	1.51	57 29.1	1.45	6		29.2
23	15 46.2	15 50.5	57 46.0	1.36	58 1.8	1.26	0 37.3	2.13	0.7
24	15 54.5	15 58.0	58 16.3	1.15	58 29.4	1.02	1 29.6	2.23	1.7
25	16 1.1	16 3.8	58 40.8	0.89	58 50.7	0.75	2 24.4	2.33	2.7
26	16 6.1	16 7.9	58 59.0	0.62	59 5.6	0.49	3 21.3	2.40	3.7
27	16 9.3	16 10.3	59 10.7	0.36	59 14.3	0.24	4 19.3	2.42	4.7
28	16 10.9	16 11.1	59 16.5	+0.13	59 17.4	+0.02	5 17.3	2.40	5.7
29	16 11.0	16 10.6	59 17.1	-0.08	59 15.5	-0.18	6 14.2	2.34	6.7
30	16 9.8	16 8.7	59 12.7	0.28	59 8.8	0.38	7 9.3	2.26	7.7
31	16 7.3	16 5.6	59 3.7	-0.47	58 57.4	-0.58	8 2.5	2.18	8.7

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
WEDNESDAY 1.					FRIDAY 3.				
0	7 45 11.26	2.4769	N.17° 53' 32.9	3.816	0	9 42 18.31	2.3891	N.12° 44' 26.5	8.761
1	7 47 39.85	2.4761	17 49 40.4	3.934	1	9 44 41.58	2.3866	12 35 38.4	8.643
2	7 50 8.39	2.4752	17 45 40.8	4.052	2	9 47 4.70	2.3840	12 26 45.4	8.523
3	7 52 36.88	2.4743	17 41 34.1	4.170	3	9 49 27.66	2.3815	12 17 47.7	8.401
4	7 55 5.31	2.4733	17 37 20.4	4.288	4	9 51 50.47	2.3789	12 8 45.3	8.278
5	7 57 33.68	2.4723	17 32 59.6	4.405	5	9 54 13.13	2.3764	11 59 38.3	8.155
6	8 0 1.99	2.4712	17 28 31.8	4.522	6	9 56 35.64	2.3738	11 50 26.7	8.030
7	8 2 30.23	2.4701	17 23 57.0	4.638	7	9 58 58.00	2.3713	11 41 10.7	7.904
8	8 4 58.41	2.4689	17 19 15.3	4.753	8	10 1 20.20	2.3688	11 31 50.2	7.777
9	8 7 26.51	2.4677	17 14 26.6	4.868	9	10 3 42.25	2.3663	11 22 25.4	7.649
10	8 9 54.53	2.4664	17 9 31.1	4.982	10	10 6 4.15	2.3637	11 12 56.3	7.520
11	8 12 22.47	2.4651	17 4 28.8	5.096	11	10 8 25.89	2.3611	11 3 23.0	7.390
12	8 14 50.34	2.4637	16 59 19.6	5.209	12	10 10 47.48	2.3586	10 53 45.5	7.258
13	8 17 18.12	2.4623	16 54 3.6	5.322	13	10 13 8.92	2.3560	10 44 3.9	7.126
14	8 19 45.81	2.4607	16 48 40.9	5.434	14	10 15 30.20	2.3534	10 34 18.4	6.993
15	8 22 13.41	2.4592	16 43 11.5	5.545	15	10 17 51.33	2.3509	10 24 29.0	6.858
16	8 24 40.91	2.4576	16 37 35.5	5.656	16	10 20 12.31	2.3484	10 14 35.7	6.723
17	8 27 8.32	2.4560	16 31 52.8	5.766	17	10 22 33.14	2.3458	10 4 38.7	6.587
18	8 29 35.63	2.4543	16 26 3.6	5.875	18	10 24 53.81	2.3433	9 54 37.9	6.450
19	8 32 2.84	2.4526	16 20 7.8	5.984	19	10 27 14.33	2.3408	9 44 33.5	6.312
20	8 34 29.94	2.4509	16 14 5.5	6.092	20	10 29 34.70	2.3382	9 34 25.5	6.174
21	8 36 56.94	2.4491	16 7 56.7	6.199	21	10 31 54.92	2.3357	9 24 14.1	6.035
22	8 39 23.83	2.4473	16 1 41.6	6.306	22	10 34 14.98	2.3332	9 13 59.2	5.895
23	8 41 50.61	2.4453	N.15° 55' 20.1	6.411	23	10 36 34.89	2.3307	N. 9 3 41.0	5.754
THURSDAY 2.					SATURDAY 4.				
0	8 44 17.27	2.4434	N.15° 48' 52.3	6.516	0	10 38 54.65	2.3282	N. 8 53 19.5	5.612
1	8 46 43.82	2.4416	15 42 18.2	6.620	1	10 41 14.27	2.3257	8 42 54.8	5.468
2	8 49 10.25	2.4396	15 35 37.9	6.723	2	10 43 33.74	2.3232	8 32 27.0	5.323
3	8 51 36.56	2.4376	15 28 51.5	6.826	3	10 45 53.06	2.3206	8 21 56.2	5.178
4	8 54 2.75	2.4355	15 21 58.9	6.927	4	10 48 12.24	2.3183	8 11 22.4	5.032
5	8 56 28.82	2.4334	15 15 0.2	7.028	5	10 50 31.27	2.3159	8 0 45.8	4.885
6	8 58 54.76	2.4313	15 7 55.6	7.128	6	10 52 50.15	2.3135	7 50 6.3	4.737
7	9 1 20.57	2.4291	15 0 45.0	7.227	7	10 55 8.89	2.3111	7 39 24.1	4.588
8	9 3 46.25	2.4269	14 53 28.4	7.326	8	10 57 27.48	2.3087	7 28 39.2	4.438
9	9 6 11.80	2.4247	14 46 6.0	7.423	9	10 59 45.93	2.3063	7 17 51.8	4.287
10	9 8 37.21	2.4225	14 38 37.8	7.518	10	11 2 4.24	2.3039	7 7 1.8	4.135
11	9 11 2.49	2.4203	14 41 3.8	7.613	11	11 4 22.40	2.3016	6 56 9.4	3.982
12	9 13 27.64	2.4180	14 23 24.2	7.707	12	11 6 40.43	2.2993	6 45 14.6	3.828
13	9 15 52.65	2.4157	14 15 38.9	7.801	13	11 8 58.32	2.2970	6 34 17.5	3.673
14	9 18 17.52	2.4133	14 7 48.1	7.893	14	11 11 16.07	2.2947	6 23 18.3	3.517
15	9 20 42.25	2.4109	13 59 51.7	7.985	15	11 13 33.69	2.2924	6 12 17.0	3.360
16	9 23 6.83	2.4086	13 51 49.9	8.076	16	11 15 51.17	2.2902	6 1 13.6	3.202
17	9 25 31.27	2.4062	13 43 42.7	8.166	17	11 18 8.52	2.2880	5 50 8.2	3.043
18	9 27 55.57	2.4038	13 35 30.2	8.254	18	11 20 25.74	2.2858	5 39 1.0	2.883
19	9 30 19.73	2.4014	13 27 12.4	8.340	19	11 22 42.82	2.2836	5 27 51.9	2.722
20	9 32 43.74	2.3990	13 18 49.4	8.426	20	11 24 59.77	2.2814	5 16 41.1	2.560
21	9 35 7.60	2.3965	13 10 21.2	8.512	21	11 27 16.59	2.2793	5 5 28.6	2.397
22	9 37 31.32	2.3941	13 1 48.0	8.596	22	11 29 33.29	2.2772	4 54 14.5	2.233
23	9 39 54.89	2.3916	12 53 9.7	8.679	23	11 31 49.86	2.2751	4 42 58.9	2.068
24	9 42 18.31	2.3891	N.12° 44' 26.5	8.761	24	11 34 6.30	2.2730	N. 4 31 41.9	1.902

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SUNDAY 5.					TUESDAY 7.				
0	h m s	"	N. 4 31' 41.9"	11.326	0	h m s	"	S. 4 33' 28.3"	10.961
1	11 34 6.30	2.3780	4 20 23.5	11.317	1	13 21 18.46	2.2037	4 44 24.9	10.926
2	11 36 22.62	2.3710	4 9 3.9	11.337	2	13 23 30.66	2.2029	4 55 19.4	10.890
3	11 38 38.82	2.3680	3 57 43.1	11.367	3	13 25 42.81	2.2021	5 6 11.7	10.863
4	11 40 54.90	2.3670	3 46 21.1	11.375	4	13 27 54.91	2.2013	5 17 1.7	10.814
5	11 43 10.86	2.3650	3 34 58.1	11.393	5	13 30 6.97	2.2006	5 27 49.4	10.775
6	11 45 26.70	2.3630	3 23 34.1	11.407	6	13 32 18.98	2.1998	5 38 34.7	10.736
7	11 47 42.42	2.3611	3 12 9.3	11.421	7	13 34 30.95	2.1991	5 49 17.6	10.694
8	11 49 58.03	2.3593	3 0 43.6	11.434	8	13 36 42.88	2.1984	5 59 58.0	10.662
9	11 52 13.53	2.3573	2 49 17.1	11.446	9	13 38 54.76	2.1977	6 10 35.9	10.609
10	11 54 28.92	2.3555	2 37 50.0	11.456	10	13 41 6.60	2.1971	6 21 11.1	10.564
11	11 56 44.19	2.3536	2 26 22.3	11.466	11	13 43 18.41	2.1964	6 31 43.6	10.519
12	11 58 59.35	2.3518	2 14 54.1	11.474	12	13 45 30.18	2.1966	6 42 13.4	10.473
13	12 1 14.41	2.3500	2 3 25.4	11.481	13	13 47 41.91	2.1959	6 52 40.4	10.426
14	12 3 29.36	2.3483	1 51 56.4	11.486	14	13 49 53.61	2.1946	7 3 4.5	10.378
15	12 5 44.21	2.3466	1 40 27.1	11.490	15	13 52 5.27	2.1940	7 13 25.7	10.330
16	12 7 58.96	2.3449	1 28 57.6	11.493	16	13 54 16.90	2.1936	7 23 44.0	10.279
17	12 10 13.60	2.3432	1 17 27.9	11.495	17	13 56 28.49	2.1930	7 33 59.2	10.228
18	12 12 28.15	2.3416	1 5 58.2	11.496	18	13 58 40.05	2.1926	7 44 11.4	10.177
19	12 14 42.60	2.3400	0 54 28.5	11.496	19	14 0 51.59	2.1920	7 54 20.5	10.126
20	12 16 56.95	2.3384	0 42 58.8	11.498	20	14 3 3.10	2.1916	8 4 26.4	10.074
21	12 19 11.21	2.3368	0 31 29.3	11.490	21	14 5 14.58	2.1911	8 14 29.1	10.018
22	12 21 25.37	2.3353	0 20 0.0	11.488	22	14 7 26.03	2.1907	8 24 28.5	9.962
23	12 23 39.44	2.3338	N. 0 8 31.1	11.479	23	14 9 37.46	2.1902	S. 8 34 24.6	9.906
24	12 25 53.42	2.3323				14 11 48.86	2.1898		
MONDAY 6.					WEDNESDAY 8.				
0	12 28 7.32	2.3308	S. 0 2 57.5	11.473	0	14 14 0.23	2.1894	S. 8 44 17.2	9.849
1	12 30 21.13	2.3294	0 14 25.6	11.464	1	14 16 11.58	2.1890	8 54 6.4	9.791
2	12 32 34.85	2.3280	0 25 53.2	11.456	2	14 18 22.91	2.1886	9 3 52.2	9.732
3	12 34 48.49	2.3267	0 37 20.2	11.446	3	14 20 34.22	2.1882	9 13 34.4	9.673
4	12 37 2.05	2.3253	0 48 46.6	11.433	4	14 22 45.51	2.1879	9 23 13.0	9.613
5	12 39 15.53	2.3240	1 0 12.2	11.421	5	14 24 56.77	2.1876	9 32 48.0	9.562
6	12 41 28.93	2.3227	1 11 37.1	11.407	6	14 27 8.01	2.1872	9 42 19.3	9.491
7	12 43 42.25	2.3214	1 23 1.1	11.393	7	14 29 19.23	2.1869	9 51 46.9	9.429
8	12 45 55.50	2.3202	1 34 24.1	11.376	8	14 31 30.44	2.1866	10 1 10.8	9.366
9	12 48 8.68	2.3190	1 45 46.1	11.356	9	14 33 41.63	2.1863	10 10 30.8	9.302
10	12 50 21.78	2.3178	1 57 7.0	11.336	10	14 35 52.80	2.1860	10 19 47.0	9.237
11	12 52 34.81	2.3166	2 8 26.8	11.319	11	14 38 3.95	2.1856	10 28 59.2	9.171
12	12 54 47.77	2.3154	2 19 45.3	11.298	12	14 40 15.09	2.1856	10 38 7.5	9.106
13	12 57 0.66	2.3143	2 31 2.5	11.276	13	14 42 26.21	2.1853	10 47 11.8	9.038
14	12 59 13.49	2.3132	2 42 18.4	11.253	14	14 44 37.32	2.1850	10 56 12.1	8.970
15	13 1 26.25	2.3122	2 53 32.9	11.229	15	14 46 48.42	2.1848	11 5 8.3	8.902
16	13 3 38.95	2.3112	3 4 45.9	11.203	16	14 48 59.50	2.1846	11 14 0.4	8.833
17	13 5 51.59	2.3102	3 15 57.3	11.177	17	14 51 10.57	2.1843	11 22 48.3	8.763
18	13 8 4.17	2.3092	3 27 7.1	11.149	18	14 53 21.62	2.1840	11 31 32.0	8.693
19	13 10 16.69	2.3082	3 38 15.2	11.121	19	14 55 32.66	2.1838	11 40 11.5	8.622
20	13 12 29.15	2.3073	3 49 21.6	11.091	20	14 57 43.68	2.1836	11 48 46.7	8.550
21	13 14 41.56	2.3063	4 0 26.2	11.061	21	14 59 54.69	2.1834	11 57 17.6	8.478
22	13 16 53.91	2.3054	4 11 28.9	11.029	22	15 2 5.69	2.1832	12 5 44.1	8.406
23	13 19 6.21	2.3046	4 22 29.6	10.996	23	15 4 16.68	2.1830	12 14 6.3	8.332
24	13 21 18.46	2.3037	S. 4 33 28.3	10.961	24	15 6 27.65	2.1828	S. 12 22 24.0	8.266

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
THURSDAY 9.					SATURDAY 11.				
0	15 6 27.65	2.1828	S.12° 22' 24.0	6.268	0	16 50 56.33	2.1673	S.17° 24' 12.8	4.180
1	15 8 38.61	2.1826	12 30 37.3	6.183	1	16 53 6.35	2.1686	17 28 20.8	4.088
2	15 10 49.56	2.1824	12 38 46.0	6.108	2	16 55 16.33	2.1690	17 32 23.3	3.996
3	15 13 0.50	2.1822	12 46 50.2	6.032	3	16 57 26.27	2.1683	17 36 20.2	3.903
4	15 15 11.43	2.1820	12 54 49.8	5.956	4	16 59 36.17	2.1647	17 40 11.6	3.811
5	15 17 22.35	2.1818	13 2 44.8	5.878	5	17 1 46.03	2.1640	17 43 57.4	3.718
6	15 19 33.25	2.1816	13 10 35.2	5.800	6	17 3 55.86	2.1634	17 47 37.7	3.626
7	15 21 44.14	2.1814	13 18 20.9	5.722	7	17 6 5.65	2.1627	17 51 12.5	3.533
8	15 23 55.02	2.1812	13 26 1.9	5.644	8	17 8 15.39	2.1620	17 54 41.7	3.440
9	15 26 5.89	2.1810	13 33 38.2	5.566	9	17 10 25.09	2.1612	17 58 5.3	3.347
10	15 28 16.74	2.1808	13 41 9.7	5.488	10	17 12 34.74	2.1606	18 1 23.4	3.254
11	15 30 27.58	2.1806	13 48 36.4	5.408	11	17 14 44.34	2.1597	18 4 35.9	3.162
12	15 32 38.41	2.1804	13 55 58.3	5.324	12	17 16 53.90	2.1589	18 7 42.8	3.069
13	15 34 49.23	2.1802	14 3 15.3	5.248	13	17 19 3.41	2.1581	18 10 44.2	2.976
14	15 37 0.03	2.1799	14 10 27.5	5.161	14	17 21 12.87	2.1573	18 13 40.0	2.883
15	15 39 10.82	2.1797	14 17 34.7	5.079	15	17 23 22.28	2.1565	18 16 30.2	2.790
16	15 41 21.59	2.1795	14 24 37.0	4.997	16	17 25 31.65	2.1557	18 19 14.8	2.697
17	15 43 32.35	2.1793	14 31 34.3	4.914	17	17 27 40.96	2.1548	18 21 53.8	2.604
18	15 45 43.10	2.1790	14 38 26.7	4.831	18	17 29 50.22	2.1539	18 24 27.3	2.511
19	15 47 53.83	2.1788	14 45 14.0	4.747	19	17 31 59.42	2.1529	18 26 55.2	2.418
20	15 50 4.55	2.1785	14 51 56.3	4.663	20	17 34 8.57	2.1520	18 29 17.5	2.325
21	15 52 15.25	2.1783	14 58 33.5	4.578	21	17 36 17.06	2.1510	18 31 34.2	2.232
22	15 54 25.94	2.1780	15 5 5.7	4.493	22	17 38 26.69	2.1501	18 33 45.3	2.139
23	15 56 36.61	2.1777	S.15 11 32.8	4.408	23	17 40 35.66	2.1491	S.18 35 50.8	2.046
FRIDAY 10.					SUNDAY 12.				
0	15 58 47.26	2.1774	S.15 17 54.7	6.322	0	17 42 44.58	2.1481	S.18 37 50.8	1.953
1	16 0 57.89	2.1771	15 24 11.4	6.236	1	17 44 53.44	2.1471	18 39 45.2	1.860
2	16 3 8.51	2.1768	15 30 23.0	6.150	2	17 47 2.23	2.1461	18 41 34.0	1.767
3	16 5 19.11	2.1765	15 36 29.4	6.063	3	17 49 10.96	2.1450	18 43 17.3	1.675
4	16 7 29.69	2.1762	15 42 30.6	5.976	4	17 51 19.63	2.1439	18 44 55.0	1.582
5	16 9 40.25	2.1760	15 48 26.5	5.888	5	17 53 28.23	2.1428	18 46 27.1	1.489
6	16 11 50.80	2.1756	15 54 17.2	5.801	6	17 55 36.76	2.1417	18 47 53.7	1.396
7	16 14 1.32	2.1752	16 0 2.6	5.713	7	17 57 45.23	2.1406	18 49 14.7	1.303
8	16 16 11.82	2.1749	16 5 42.7	5.625	8	17 59 53.63	2.1395	18 50 30.1	1.211
9	16 18 22.30	2.1745	16 11 17.5	5.536	9	18 2 1.96	2.1383	18 51 40.0	1.119
10	16 20 32.76	2.1741	16 16 47.0	5.447	10	18 4 10.22	2.1371	18 52 44.4	1.027
11	16 22 43.19	2.1737	16 22 11.2	5.358	11	18 6 18.41	2.1359	18 53 43.3	0.935
12	16 24 53.60	2.1733	16 27 30.0	5.269	12	18 8 26.53	2.1347	18 54 36.6	0.843
13	16 27 3.98	2.1728	16 32 43.4	5.179	13	18 10 34.58	2.1335	18 55 24.4	0.751
14	16 29 14.34	2.1724	16 37 51.5	5.089	14	18 12 42.55	2.1323	18 56 6.7	0.659
15	16 31 24.67	2.1720	16 42 54.1	4.998	15	18 14 50.45	2.1310	18 56 43.6	0.566
16	16 33 34.98	2.1715	16 47 51.3	4.908	16	18 16 58.27	2.1297	18 57 14.9	0.476
17	16 35 45.26	2.1710	16 52 43.1	4.817	17	18 19 6.01	2.1284	18 57 40.7	0.385
18	16 37 55.51	2.1706	16 57 29.4	4.727	18	18 21 13.67	2.1271	18 58 1.1	0.294
19	16 40 5.73	2.1700	17 2 10.3	4.636	19	18 23 21.26	2.1258	18 58 16.0	0.203
20	16 42 15.92	2.1695	17 6 45.8	4.545	20	18 25 28.77	2.1245	18 58 25.4	0.112
21	16 44 26.07	2.1690	17 11 15.8	4.454	21	18 27 36.20	2.1231	18 58 29.4	0.021
22	16 46 36.19	2.1685	17 15 40.3	4.363	22	18 29 43.54	2.1217	18 58 27.9	0.070
23	16 48 46.28	2.1679	17 19 59.3	4.271	23	18 31 50.80	2.1203	18 58 21.0	0.180
24	16 50 56.33	2.1673	S.17 24 12.8	4.180	24	18 33 57.98	2.1189	S.18 58 8.7	0.280

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
MONDAY 13.					WEDNESDAY 15.				
0	18 33 57.98	2.1189	S.18 58 8.7	0.280	0	20 13 53.33	2.0426	S.17 6 44.8	4.284
1	18 36 5.08	2.1175	18 57 51.0	0.340	1	20 15 55.84	2.0410	17 2 25.4	4.361
2	18 38 12.09	2.1161	18 57 27.9	0.430	2	20 17 58.25	2.0394	16 58 1.5	4.437
3	18 40 19.01	2.1147	18 56 59.4	0.519	3	20 20 0.56	2.0378	16 53 33.0	4.513
4	18 42 25.85	2.1133	18 56 25.6	0.609	4	20 22 2.78	2.0362	16 49 0.0	4.588
5	18 44 32.60	2.1118	18 55 46.4	0.698	5	20 24 4.90	2.0346	16 44 22.4	4.663
6	18 46 39.27	2.1103	18 55 1.9	0.787	6	20 26 6.93	2.0330	16 39 40.4	4.738
7	18 48 45.85	2.1088	18 54 12.0	0.876	7	20 28 8.86	2.0314	16 34 53.9	4.812
8	18 50 52.33	2.1073	18 53 16.8	0.964	8	20 30 10.70	2.0298	16 30 3.0	4.886
9	18 52 58.72	2.1058	18 52 16.3	1.052	9	20 32 12.45	2.0283	16 25 7.6	4.960
10	18 55 5.03	2.1043	18 51 10.5	1.140	10	20 34 14.10	2.0268	16 20 7.8	5.034
11	18 57 11.25	2.1028	18 49 59.4	1.228	11	20 36 15.66	2.0252	16 15 3.6	5.108
12	18 59 17.37	2.1013	18 48 43.1	1.316	12	20 38 17.13	2.0237	16 9 55.1	5.179
13	19 1 23.40	2.0997	18 47 21.5	1.403	13	20 40 18.50	2.0221	16 4 42.2	5.251
14	19 3 29.34	2.0982	18 45 54.7	1.491	14	20 42 19.78	2.0206	15 59 25.0	5.323
15	19 5 35.18	2.0966	18 44 22.7	1.578	15	20 44 20.97	2.0191	15 54 3.5	5.394
16	19 7 40.93	2.0950	18 42 45.4	1.665	16	20 46 22.07	2.0176	15 48 37.7	5.465
17	19 9 46.58	2.0934	18 41 2.9	1.751	17	20 48 23.08	2.0162	15 43 7.7	5.536
18	19 11 52.14	2.0918	18 39 15.3	1.837	18	20 50 24.01	2.0147	15 37 33.4	5.606
19	19 13 57.60	2.0903	18 37 22.5	1.923	19	20 52 24.85	2.0132	15 31 54.9	5.676
20	19 16 2.97	2.0886	18 35 24.6	2.008	20	20 54 25.61	2.0119	15 26 12.3	5.745
21	19 18 8.24	2.0870	18 33 21.6	2.093	21	20 56 26.28	2.0106	15 20 25.5	5.814
22	19 20 13.41	2.0854	18 31 13.4	2.178	22	20 58 26.87	2.0091	15 14 34.6	5.883
23	19 22 18.49	2.0838	S.18 29 0.1	2.263	23	21 0 27.37	2.0077	S.15 8 39.5	5.953
TUESDAY 14.					THURSDAY 16.				
0	19 24 23.47	2.0823	S.18 26 41.8	2.348	0	21 2 27.79	2.0063	S.15 2 40.4	6.020
1	19 26 28.35	2.0806	18 24 18.4	2.432	1	21 4 28.13	2.0049	14 56 37.2	6.088
2	19 28 33.13	2.0790	18 21 50.0	2.516	2	21 6 28.38	2.0036	14 50 29.9	6.156
3	19 30 37.82	2.0773	18 19 16.5	2.600	3	21 8 28.56	2.0023	14 44 18.6	6.221
4	19 32 42.41	2.0757	18 16 38.0	2.683	4	21 10 28.66	2.0010	14 38 3.4	6.287
5	19 34 46.90	2.0740	18 13 54.5	2.766	5	21 12 28.68	1.9997	14 31 44.2	6.353
6	19 36 51.29	2.0724	18 11 6.1	2.849	6	21 14 28.63	1.9984	14 25 21.0	6.419
7	19 38 55.58	2.0707	18 8 12.7	2.932	7	21 16 28.50	1.9972	14 18 53.9	6.484
8	19 40 59.77	2.0691	18 5 14.3	3.014	8	21 18 28.30	1.9960	14 12 22.9	6.549
9	19 43 3.86	2.0674	18 2 11.0	3.096	9	21 20 28.03	1.9948	14 5 48.0	6.613
10	19 45 7.86	2.0658	17 59 2.8	3.177	10	21 22 27.68	1.9936	13 59 9.3	6.677
11	19 47 11.76	2.0641	17 55 49.8	3.258	11	21 24 27.26	1.9924	13 52 26.8	6.740
12	19 49 15.55	2.0625	17 52 31.9	3.339	12	21 26 26.77	1.9912	13 45 40.5	6.803
13	19 51 19.24	2.0608	17 49 9.9	3.419	13	21 28 26.21	1.9901	13 38 50.4	6.866
14	19 53 22.84	2.0591	17 45 41.6	3.500	14	21 30 25.59	1.9890	13 31 56.6	6.928
15	19 55 26.24	2.0574	17 42 9.2	3.580	15	21 32 24.90	1.9879	13 24 59.0	6.990
16	19 57 29.73	2.0556	17 38 32.0	3.659	16	21 34 24.14	1.9868	13 17 57.8	7.052
17	19 59 33.02	2.0541	17 34 50.1	3.738	17	21 36 23.32	1.9858	13 10 52.9	7.113
18	20 1 36.22	2.0525	17 31 3.4	3.817	18	21 38 22.44	1.9848	13 3 44.3	7.173
19	20 3 39.32	2.0508	17 27 12.0	3.896	19	21 40 21.50	1.9839	12 56 32.1	7.233
20	20 5 42.32	2.0493	17 23 15.9	3.975	20	21 42 20.51	1.9830	12 49 16.4	7.293
21	20 7 45.22	2.0476	17 19 15.1	4.053	21	21 44 19.46	1.9820	12 41 57.1	7.353
22	20 9 48.02	2.0460	17 15 9.6	4.130	22	21 46 18.35	1.9811	12 34 34.2	7.410
23	20 11 50.72	2.0443	17 10 59.5	4.207	23	21 48 17.19	1.9802	12 27 7.8	7.468
24	20 13 53.33	2.0426	S.17 6 44.8	4.284	24	21 50 15.97	1.9793	S.12 19 38.0	7.526

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
FRIDAY 17.					SUNDAY 19.				
0	21 50 15.97	1.9738	S. 12 19 38.0	7.596	0	23 24 49.70	1.9734	S. 5 20 51.0	9.794
1	21 52 14.71	1.9736	12 12 4.7	7.583	1	23 26 48.12	1.9741	5 11 6.6	9.786
2	21 54 13.39	1.9776	12 4 28.0	7.640	2	23 28 46.59	1.9748	5 1 20.3	9.787
3	21 56 12.02	1.9768	11 56 47.8	7.697	3	23 30 45.10	1.9756	4 51 32.1	9.818
4	21 58 10.61	1.9760	11 49 4.3	7.763	4	23 32 43.66	1.9764	4 41 42.1	9.848
5	22 0 9.15	1.9753	11 41 17.4	7.809	5	23 34 42.27	1.9773	4 31 50.3	9.878
6	22 2 7.65	1.9746	11 33 27.2	7.864	6	23 36 40.94	1.9783	4 21 56.7	9.907
7	22 4 6.11	1.9739	11 25 33.7	7.918	7	23 38 39.67	1.9792	4 12 1.3	9.936
8	22 6 4.52	1.9733	11 17 37.0	7.972	8	23 40 38.45	1.9802	4 2 4.3	9.964
9	22 8 2.90	1.9727	11 9 37.1	8.026	9	23 42 37.29	1.9813	3 52 5.6	9.991
10	22 10 1.24	1.9721	11 1 33.9	8.079	10	23 44 36.20	1.9824	3 42 5.3	10.017
11	22 11 59.55	1.9716	10 53 27.5	8.132	11	23 46 35.18	1.9835	3 32 3.5	10.043
12	22 13 57.83	1.9710	10 45 18.0	8.184	12	23 48 34.22	1.9846	3 22 0.1	10.068
13	22 15 56.08	1.9706	10 37 5.3	8.236	13	23 50 33.33	1.9856	3 11 55.2	10.098
14	22 17 54.29	1.9700	10 28 49.6	8.288	14	23 52 32.51	1.9870	3 1 48.8	10.117
15	22 19 52.47	1.9696	10 20 30.8	8.339	15	23 54 31.77	1.9883	2 51 41.1	10.141
16	22 21 50.63	1.9691	10 12 8.9	8.389	16	23 56 31.10	1.9896	2 41 32.0	10.163
17	22 23 48.77	1.9687	10 3 44.0	8.439	17	23 58 30.52	1.9910	2 31 21.5	10.186
18	22 25 46.88	1.9683	9 55 16.2	8.488	18	0 0 30.02	1.9924	2 21 9.8	10.206
19	22 27 44.97	1.9680	9 46 45.5	8.537	19	0 2 29.60	1.9938	2 10 56.8	10.226
20	22 29 43.04	1.9677	9 38 11.8	8.585	20	0 4 29.27	1.9952	2 0 42.7	10.246
21	22 31 41.10	1.9675	9 29 35.2	8.633	21	0 6 29.03	1.9967	1 50 27.4	10.266
22	22 33 39.14	1.9673	9 20 55.8	8.681	22	0 8 28.88	1.9982	1 40 10.9	10.283
23	22 35 37.17	1.9671	S. 9 12 13.5	8.728	23	0 10 28.82	1.9998	S. 1 29 53.4	10.300
SATURDAY 18.					MONDAY 20.				
0	22 37 35.19	1.9668	S. 9 3 28.4	8.775	0	0 12 28.86	2.0015	S. 1 19 34.9	10.317
1	22 39 33.20	1.9666	8 54 40.5	8.821	1	0 14 29.00	2.0032	1 9 15.4	10.333
2	22 41 31.20	1.9666	8 45 49.9	8.866	2	0 16 29.24	2.0049	0 58 54.9	10.348
3	22 43 29.20	1.9667	8 36 56.6	8.911	3	0 18 29.59	2.0067	0 48 33.5	10.363
4	22 45 27.20	1.9667	8 28 0.7	8.956	4	0 20 30.04	2.0086	0 38 11.3	10.377
5	22 47 25.19	1.9666	8 19 2.2	8.998	5	0 22 30.60	2.0103	0 27 48.3	10.390
6	22 49 23.19	1.9666	8 10 1.0	9.041	6	0 24 31.27	2.0121	0 17 24.5	10.402
7	22 51 21.19	1.9667	8 0 57.2	9.084	7	0 26 32.05	2.0140	S. 0 7 0.0	10.413
8	22 53 19.19	1.9666	7 51 50.9	9.126	8	0 28 32.95	2.0160	N. 0 3 25.1	10.424
9	22 55 17.20	1.9669	7 42 42.0	9.168	9	0 30 33.97	2.0180	0 13 50.9	10.434
10	22 57 15.22	1.9671	7 33 30.7	9.209	10	0 32 35.11	2.0200	0 24 17.2	10.443
11	22 59 13.25	1.9673	7 24 17.0	9.249	11	0 34 36.37	2.0221	0 34 44.0	10.451
12	23 1 11.30	1.9675	7 15 0.8	9.289	12	0 36 37.76	2.0242	0 45 11.3	10.458
13	23 3 9.36	1.9678	7 5 42.2	9.329	13	0 38 39.28	2.0263	0 55 39.0	10.466
14	23 5 7.44	1.9681	6 56 21.3	9.368	14	0 40 40.92	2.0285	1 6 7.1	10.471
15	23 7 5.54	1.9685	6 46 58.1	9.406	15	0 42 42.70	2.0307	1 16 35.5	10.478
16	23 9 3.66	1.9689	6 37 32.6	9.444	16	0 44 44.61	2.0330	1 27 4.2	10.486
17	23 11 1.81	1.9693	6 28 4.8	9.481	17	0 46 46.66	2.0353	1 37 33.1	10.493
18	23 12 59.98	1.9698	6 18 34.9	9.517	18	0 48 48.85	2.0376	1 48 2.2	10.498
19	23 14 58.18	1.9703	6 9 2.8	9.553	19	0 50 51.18	2.0400	1 58 31.4	10.497
20	23 16 56.41	1.9708	5 59 28.6	9.588	20	0 52 53.65	2.0424	2 9 0.7	10.487
21	23 18 54.68	1.9714	5 49 52.3	9.623	21	0 54 56.27	2.0449	2 19 30.0	10.486
22	23 20 52.98	1.9720	5 40 13.9	9.657	22	0 56 59.04	2.0474	2 29 59.2	10.487
23	23 22 51.32	1.9727	5 30 33.4	9.691	23	0 59 1.96	2.0500	2 40 28.4	10.485
24	23 24 49.70	1.9734	S. 5 20 51.0	9.724	24	1 1 5.04	2.0526	N. 2 50 57.4	10.483

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
TUESDAY 21.					THURSDAY 23.				
0	1 1 5.04	2.0526	N. 2 50 57.4	10.489	0	2 43 14.01	2.2148	N. 10 52 44.0	9.198
1	1 3 8.27	2.0552	3 1 26.2	10.478	1	2 45 27.02	2.2188	11 1 54.3	9.146
2	1 5 11.66	2.0578	3 11 54.8	10.474	2	2 47 40.27	2.2227	11 11 1.5	9.092
3	1 7 15.21	2.0606	3 22 23.1	10.469	3	2 49 53.76	2.2267	11 20 5.4	9.037
4	1 9 18.92	2.0632	3 32 51.1	10.462	4	2 52 7.49	2.2307	11 29 6.0	8.981
5	1 11 22.80	2.0660	3 43 18.6	10.455	5	2 54 21.46	2.2346	11 38 3.2	8.924
6	1 13 26.85	2.0688	3 53 45.7	10.447	6	2 56 35.67	2.2386	11 46 56.9	8.866
7	1 15 31.06	2.0717	4 4 12.3	10.438	7	2 58 50.12	2.2429	11 55 47.1	8.807
8	1 17 35.45	2.0746	4 14 38.3	10.428	8	3 1 4.82	2.2469	12 4 33.8	8.746
9	1 19 40.01	2.0774	4 25 3.6	10.417	9	3 3 19.76	2.2510	12 13 16.8	8.685
10	1 21 44.74	2.0804	4 35 28.3	10.405	10	3 5 34.94	2.2551	12 21 56.0	8.622
11	1 23 49.65	2.0834	4 45 52.2	10.392	11	3 7 50.37	2.2592	12 30 31.5	8.559
12	1 25 54.75	2.0864	4 56 15.3	10.378	12	3 10 6.04	2.2632	12 39 3.1	8.494
13	1 28 0.03	2.0896	5 6 37.6	10.363	13	3 12 21.95	2.2673	12 47 30.8	8.428
14	1 30 5.49	2.0926	5 16 59.0	10.347	14	3 14 38.11	2.2713	12 55 54.4	8.361
15	1 32 11.14	2.0957	5 27 19.3	10.331	15	3 16 54.51	2.2754	13 4 14.0	8.293
16	1 34 16.97	2.0988	5 37 38.6	10.313	16	3 19 11.16	2.2794	13 12 29.5	8.223
17	1 36 22.99	2.1020	5 47 56.8	10.294	17	3 21 28.05	2.2836	13 20 40.8	8.153
18	1 38 29.21	2.1052	5 58 13.9	10.274	18	3 23 45.18	2.2876	13 28 47.8	8.081
19	1 40 35.62	2.1085	6 8 29.8	10.254	19	3 26 2.55	2.2916	13 36 50.5	8.008
20	1 42 42.23	2.1118	6 18 44.4	10.232	20	3 28 20.17	2.2956	13 44 48.8	7.934
21	1 44 49.04	2.1151	6 28 57.7	10.210	21	3 30 38.03	2.2997	13 52 42.7	7.860
22	1 46 56.05	2.1184	6 39 9.6	10.186	22	3 32 56.14	2.3037	14 0 32.0	7.784
23	1 49 3.26	2.1218	N. 6 49 20.0	10.161	23	3 35 14.49	2.3078	N. 14 8 16.8	7.707
WEDNESDAY 22.					FRIDAY 24.				
0	1 51 10.67	2.1253	N. 6 59 28.9	10.135	0	3 37 33.07	2.3118	N. 14 15 56.9	7.629
1	1 53 18.29	2.1288	7 9 36.2	10.108	1	3 39 51.90	2.3158	14 23 32.3	7.550
2	1 55 26.12	2.1322	7 19 41.9	10.080	2	3 42 10.96	2.3197	14 31 2.9	7.469
3	1 57 34.16	2.1357	7 29 45.9	10.052	3	3 44 30.26	2.3237	14 38 28.7	7.388
4	1 59 42.40	2.1392	7 39 48.1	10.022	4	3 46 49.80	2.3277	14 45 49.5	7.306
5	2 1 50.86	2.1428	7 49 48.5	9.991	5	3 49 9.58	2.3316	14 53 5.4	7.223
6	2 3 59.54	2.1464	7 59 47.0	9.959	6	3 51 29.59	2.3356	15 0 16.3	7.138
7	2 6 8.43	2.1500	8 9 43.6	9.926	7	3 53 49.84	2.3394	15 7 22.1	7.053
8	2 8 17.54	2.1536	8 19 38.1	9.892	8	3 56 10.32	2.3433	15 14 22.7	6.966
9	2 10 26.87	2.1573	8 29 30.6	9.857	9	3 58 31.03	2.3472	15 21 18.1	6.879
10	2 12 36.42	2.1610	8 39 20.9	9.820	10	4 0 51.98	2.3510	15 28 8.2	6.790
11	2 14 46.19	2.1647	8 49 9.0	9.783	11	4 3 13.16	2.3548	15 34 53.0	6.701
12	2 16 56.18	2.1684	8 58 54.9	9.744	12	4 5 34.56	2.3586	15 41 32.4	6.610
13	2 19 6.40	2.1722	9 8 38.4	9.706	13	4 7 56.19	2.3623	15 48 6.3	6.519
14	2 21 16.84	2.1760	9 18 19.5	9.664	14	4 10 18.04	2.3661	15 54 34.7	6.426
15	2 23 27.51	2.1798	9 27 58.1	9.623	15	4 12 40.11	2.3698	16 0 57.5	6.333
16	2 25 38.42	2.1836	9 37 34.2	9.580	16	4 15 2.41	2.3735	16 7 14.7	6.238
17	2 27 49.56	2.1875	9 47 7.7	9.536	17	4 17 24.93	2.3771	16 13 26.2	6.143
18	2 30 0.92	2.1913	9 56 38.6	9.491	18	4 19 47.66	2.3807	16 19 31.9	6.047
19	2 32 12.51	2.1952	10 6 6.7	9.445	19	4 22 10.60	2.3842	16 25 31.8	5.950
20	2 34 24.34	2.1991	10 15 32.0	9.398	20	4 24 33.76	2.3878	16 31 25.9	5.852
21	2 36 36.40	2.2030	10 24 54.5	9.350	21	4 26 57.13	2.3913	16 37 14.0	5.753
22	2 38 48.70	2.2069	10 34 14.0	9.300	22	4 29 20.71	2.3948	16 42 56.2	5.652
23	2 41 1.24	2.2108	10 43 30.5	9.250	23	4 31 44.50	2.3982	16 48 32.3	5.551
24	2 43 14.01	2.2148	N. 10 52 44.0	9.198	24	4 34 8.49	2.4016	N. 16 54 2.3	5.449

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SATURDAY 25.					MONDAY 27.				
0	4 34 8.49	2.4016	N.16° 54' 2.3	5.449	0	6 32 15.60	2.4948	N.19° 4' 53.9	0.187
1	4 36 32.68	2.4048	16 59 26.2	5.246	1	6 34 45.30	2.4961	19 4 38.9	0.313
2	4 38 57.07	2.4081	17 4 43.9	5.242	2	6 37 15.01	2.4982	19 4 16.4	0.439
3	4 41 21.66	2.4114	17 9 55.3	5.138	3	6 39 44.73	2.4963	19 3 46.3	0.564
4	4 43 46.44	2.4146	17 15 0.5	5.033	4	6 42 14.45	2.4982	19 3 8.7	0.690
5	4 46 11.41	2.4177	17 19 59.4	4.927	5	6 44 44.17	2.4992	19 2 23.6	0.815
6	4 48 36.57	2.4208	17 24 51.8	4.820	6	6 47 13.88	2.4990	19 1 30.9	0.941
7	4 51 1.91	2.4238	17 29 37.8	4.713	7	6 49 43.58	2.4948	19 0 30.7	1.066
8	4 53 27.43	2.4268	17 34 17.3	4.604	8	6 52 13.26	2.4946	18 59 23.0	1.191
9	4 55 53.13	2.4298	17 38 50.3	4.495	9	6 54 42.92	2.4942	18 58 7.8	1.316
10	4 58 19.01	2.4327	17 43 16.7	4.386	10	6 57 12.56	2.4937	18 56 45.1	1.441
11	5 0 45.06	2.4356	17 47 36.5	4.274	11	6 59 42.17	2.4932	18 55 14.8	1.566
12	5 3 11.28	2.4384	17 51 49.6	4.162	12	7 2 11.74	2.4926	18 53 37.1	1.691
13	5 5 37.66	2.4411	17 55 56.0	4.050	13	7 4 41.28	2.4919	18 51 51.9	1.816
14	5 8 4.21	2.4438	17 59 55.6	3.937	14	7 7 10.78	2.4912	18 49 59.2	1.940
15	5 10 30.92	2.4464	18 3 48.5	3.824	15	7 9 40.22	2.4904	18 47 59.1	2.064
16	5 12 57.78	2.4490	18 7 34.5	3.710	16	7 12 9.62	2.4896	18 45 51.6	2.188
17	5 15 24.80	2.4515	18 11 13.6	3.596	17	7 14 38.96	2.4886	18 43 36.6	2.311
18	5 17 51.96	2.4539	18 14 45.9	3.479	18	7 17 8.25	2.4876	18 41 14.3	2.434
19	5 20 19.26	2.4563	18 18 11.2	3.363	19	7 19 37.47	2.4865	18 38 44.6	2.557
20	5 22 46.71	2.4586	18 21 29.5	3.246	20	7 22 6.63	2.4854	18 36 7.5	2.679
21	5 25 14.29	2.4608	18 24 40.8	3.129	21	7 24 35.72	2.4842	18 33 23.1	2.801
22	5 27 42.01	2.4630	18 27 45.0	3.011	22	7 27 4.73	2.4829	18 30 31.4	2.923
23	5 30 9.86	2.4652	N.18 30 42.1	2.893	23	7 29 33.66	2.4816	N.18 27 32.4	3.044
SUNDAY 26.					TUESDAY 28.				
0	5 32 37.83	2.4672	N.18 33 32.1	2.774	0	7 32 2.51	2.4801	N.18 24 26.2	3.166
1	5 35 5.92	2.4692	18 36 15.0	2.656	1	7 34 31.27	2.4786	18 21 12.7	3.285
2	5 37 34.13	2.4711	18 38 50.7	2.538	2	7 36 59.94	2.4771	18 17 52.0	3.405
3	5 40 2.45	2.4729	18 41 19.2	2.414	3	7 39 28.52	2.4756	18 14 24.1	3.524
4	5 42 30.88	2.4746	18 43 40.4	2.293	4	7 41 57.00	2.4739	18 10 49.1	3.643
5	5 44 59.41	2.4763	18 45 54.4	2.172	5	7 44 25.38	2.4722	18 7 6.9	3.762
6	5 47 28.04	2.4779	18 48 1.1	2.050	6	7 46 53.66	2.4704	18 3 17.7	3.880
7	5 49 56.77	2.4795	18 50 0.5	1.928	7	7 49 21.83	2.4686	17 59 21.4	3.997
8	5 52 25.59	2.4810	18 51 52.5	1.806	8	7 51 49.89	2.4667	17 55 18.1	4.114
9	5 54 54.50	2.4825	18 53 37.2	1.683	9	7 54 17.83	2.4648	17 51 7.8	4.230
10	5 57 23.49	2.4838	18 55 14.5	1.560	10	7 56 45.66	2.4629	17 46 50.5	4.345
11	5 59 52.56	2.4851	18 56 44.4	1.437	11	7 59 13.37	2.4608	17 42 26.3	4.460
12	6 2 21.71	2.4863	18 58 6.9	1.313	12	8 1 40.95	2.4587	17 37 55.3	4.574
13	6 4 50.92	2.4874	18 59 22.0	1.189	13	8 4 8.40	2.4566	17 33 17.4	4.688
14	6 7 20.20	2.4885	19 0 29.6	1.065	14	8 6 35.73	2.4543	17 28 32.7	4.801
15	6 9 49.54	2.4895	19 1 29.8	0.941	15	8 9 2.93	2.4521	17 23 41.2	4.914
16	6 12 18.94	2.4904	19 2 22.5	0.817	16	8 11 29.99	2.4498	17 18 43.0	5.026
17	6 14 48.39	2.4912	19 3 7.7	0.692	17	8 13 56.91	2.4475	17 13 38.1	5.137
18	6 17 17.88	2.4920	19 3 45.4	0.567	18	8 16 23.69	2.4451	17 8 26.6	5.247
19	6 19 47.42	2.4927	19 4 15.7	0.441	19	8 18 50.33	2.4427	17 3 8.5	5.357
20	6 22 17.00	2.4935	19 4 38.4	0.316	20	8 21 16.82	2.4403	16 57 43.8	5.466
21	6 24 46.61	2.4938	19 4 53.6	0.190	21	8 23 43.16	2.4378	16 52 12.6	5.573
22	6 27 16.25	2.4942	19 5 1.2	0.065	22	8 26 9.35	2.4353	16 46 35.0	5.680
23	6 29 45.92	2.4946	19 5 1.3	0.061	23	8 28 35.39	2.4327	16 40 50.9	5.787
24	6 32 15.60	2.4949	N.19 4 53.9	0.187	24	8 31 1.28	2.4301	N.16 35 0.5	5.893

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
WEDNESDAY 29.					THURSDAY 30.				
0	h m s	s	N. 16° 35' 0.5	8.993	0	h m s	s	N. 13° 45' 13.1	8.166
1	8 31 1.28	2.4301	16 29 3.7	8.998	1	9 28 31.85	2.3605	13 37 0.6	8.249
2	8 35 52.58	2.4275	16 23 0.7	6.102	2	9 30 53.39	2.3674	13 28 43.2	8.330
3	8 38 17.99	2.4249	16 16 51.4	6.206	3	9 33 14.74	2.3643	13 20 20.9	8.411
4	8 40 43.24	2.4223	16 10 36.0	6.308	4	9 35 35.91	2.3613	13 11 53.8	8.490
5	8 43 8.32	2.4195	16 4 14.4	6.410	5	9 37 56.90	2.3582	13 3 22.0	8.569
6	8 45 33.23	2.4167	15 57 46.8	6.511	6	9 40 17.70	2.3552	12 54 45.5	8.646
7	8 47 57.98	2.4139	15 51 13.1	6.611	7	9 42 38.32	2.3521	12 46 4.4	8.723
8	8 50 22.56	2.4111	15 44 33.5	6.710	8	9 44 58.76	2.3490	12 37 18.7	8.798
9	8 52 46.97	2.4083	15 37 48.0	6.808	9	9 47 19.01	2.3459	12 28 28.5	8.873
10	8 55 11.21	2.4054	15 30 56.6	6.905	10	9 49 39.07	2.3429	12 19 33.9	8.946
11	8 57 35.27	2.4026	15 23 59.4	7.001	11	9 51 58.96	2.3399	12 10 35.0	9.018
12	8 59 59.16	2.3996	15 16 56.5	7.096	12	9 54 18.67	2.3368	12 1 31.7	9.089
13	9 2 22.87	2.3967	15 9 47.9	7.191	13	9 56 38.19	2.3338	11 52 24.2	9.159
14	9 4 46.41	2.3938	15 2 33.6	7.284	14	9 58 57.53	2.3306	11 43 12.6	9.228
15	9 7 9.76	2.3908	14 55 13.7	7.377	15	10 1 16.69	2.3178	11 33 56.8	9.296
16	9 9 32.94	2.3878	14 47 48.3	7.469	16	10 3 35.66	2.3146	11 24 37.0	9.362
17	9 11 55.94	2.3848	14 40 17.4	7.560	17	10 5 54.46	2.3118	11 15 13.2	9.428
18	9 14 18.76	2.3818	14 32 41.1	7.650	18	10 8 13.08	2.3088	11 5 45.6	9.493
19	9 16 41.40	2.3788	14 24 59.4	7.739	19	10 10 31.52	2.3059	10 56 14.1	9.557
20	9 19 3.85	2.3758	14 17 12.5	7.828	20	10 12 49.79	2.3030	10 46 38.8	9.619
21	9 21 26.13	2.3728	14 9 20.3	7.913	21	10 15 7.88	2.3000	10 36 59.8	9.680
22	9 23 48.22	2.3698	14 1 23.0	7.998	22	10 17 25.79	2.2971	10 27 17.1	9.740
23	9 26 10.13	2.3667	13 53 20.6	8.083	23	10 19 43.53	2.2942	10 17 30.9	9.799
24	9 28 31.85	2.3636	N. 13° 45' 13.1	8.166	24	10 22 1.10	2.2913	N. 10° 7' 41.2	9.857

PHASES OF THE MOON.

○ Full Moon,	d h m
☾ Last Quarter,	14 10 34.7
● New Moon,	22 8 19.8
☽ First Quarter,	29 6 17.8

☾ Perigee,	d h
☾ Apogee,	15 4.2
☾ Perigee,	28 14.4

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Dist.	IIIh.	P. L. of Dist.	VIh.	P. L. of Dist.	IXh.	P. L. of Dist.
1	SUN	W.	102° 54' 48"	2568	104° 34' 0"	2563	106° 13' 19"	2577	107° 52' 46"	2573
	Venus	W.	60 51 49	2571	62 29 8	2565	64 6 35	2568	65 44 11	2562
	Aldebaran	W.	46 56 17	2269	48 43 2	2264	50 29 55	2269	52 16 55	2254
	Regulus	E.	33 13 4	2272	31 26 23	2267	29 39 35	2262	27 52 40	2266
	Spica	E.	86 54 55	2293	85 8 45	2287	83 22 27	2282	81 36 1	2277
2	SUN	W.	116 11 32	2561	117 51 34	2548	119 31 41	2545	121 11 52	2542
	Venus	W.	73 54 5	2526	75 32 24	2522	77 10 49	2518	78 49 19	2515
	Aldebaran	W.	61 13 34	2233	63 1 12	2230	64 48 55	2227	66 36 42	2234
	Spica	E.	72 42 19	2259	70 55 19	2256	69 8 14	2253	67 21 6	2261
	Saturn	E.	116 13 27	2232	114 25 47	2229	112 38 2	2225	110 50 11	2232
3	SUN	W.	129 33 34	2534	131 14 0	2534	132 54 26	2534	134 34 52	2535
	Venus	W.	87 2 51	2503	88 41 42	2502	90 20 34	2501	91 59 27	2501
	Aldebaran	W.	75 36 37	2213	77 24 45	2213	79 12 53	2212	81 1 2	2212
	Pollux	W.	33 1 9	2445	34 43 40	2424	36 26 40	2406	38 10 6	2390
	Spica	E.	58 24 47	2246	56 37 28	2246	54 50 9	2247	53 2 51	2246
	Saturn	E.	101 49 57	2210	100 1 45	2209	98 13 31	2208	96 25 16	2208
	Antares	E.	104 12 56	2280	102 26 27	2278	100 39 55	2277	98 53 22	2276
4	Venus	W.	100 13 48	2507	101 52 34	2509	103 31 17	2512	105 9 55	2516
	Aldebaran	W.	90 1 48	2215	91 49 53	2217	93 37 55	2220	95 25 53	2223
	Pollux	W.	46 51 50	2344	48 36 46	2338	50 21 50	2335	52 6 59	2332
	Spica	E.	44 7 10	2264	42 20 18	2270	40 33 34	2276	38 46 59	2283
	Saturn	E.	87 24 4	2212	85 35 54	2214	83 47 47	2216	81 59 43	2218
	Antares	E.	90 0 26	2278	88 13 54	2280	86 27 25	2282	84 41 1	2287
5	Pollux	W.	60 53 13	2233	62 38 25	2235	64 23 33	2239	66 8 36	2242
	Regulus	W.	24 17 15	2247	26 4 33	2252	27 51 43	2256	29 38 45	2264
	Saturn	E.	73 0 40	2240	71 13 12	2246	69 25 52	2251	67 38 40	2257
	Antares	E.	75 50 26	2311	74 4 42	2317	72 19 8	2325	70 33 45	2333
6	Pollux	W.	74 52 8	2273	76 36 23	2280	78 20 27	2288	80 4 19	2296
	Regulus	W.	38 31 28	2200	40 17 27	2209	42 3 13	2219	43 48 45	2228
	Saturn	E.	58 45 16	2296	56 59 11	2306	55 13 20	2315	53 27 42	2326
	Antares	E.	61 49 55	2281	60 5 53	2293	58 22 8	2305	56 38 41	2319
	α Aquilæ	E.	108 50 42	2331	107 16 54	2329	105 43 4	2330	104 9 15	2332
7	Pollux	W.	88 40 10	2449	90 22 35	2461	92 4 43	2474	93 46 33	2487
	Regulus	W.	52 32 47	2292	54 16 48	2294	56 0 32	2406	57 43 58	2418
	Saturn	E.	44 43 26	2293	42 59 25	2294	41 15 42	2407	39 32 17	2421
	Antares	E.	48 6 32	2406	46 25 16	2417	44 44 26	2437	43 4 4	2456
	α Aquilæ	E.	96 21 22	2361	94 48 13	2370	93 15 16	2381	91 42 33	2393
8	Pollux	W.	102 11 5	2556	103 51 0	2572	105 30 34	2586	107 9 48	2601
	Regulus	W.	66 16 38	2485	67 58 13	2499	69 39 28	2513	71 20 23	2527
	Saturn	E.	31 0 16	2495	29 18 56	2519	27 38 0	2530	25 57 28	2546
	Antares	E.	34 50 15	2599	33 13 21	2722	31 37 11	2760	30 1 50	2801
	α Aquilæ	E.	84 3 7	2596	82 32 12	2595	81 1 40	2603	79 31 31	2623
	Fomalhaut	E.	117 27 51	2578	115 54 58	2576	114 22 9	2580	112 49 25	2586
9	Regulus	W.	79 40 0	2600	81 18 55	2615	82 57 29	2631	84 35 42	2646
	Spica	W.	26 34 7	2710	28 10 34	2713	29 46 57	2719	31 23 12	2726
	α Aquilæ	E.	72 7 18	3137	70 39 53	3163	69 13 0	3190	67 46 39	3219
	Fomalhaut	E.	105 7 51	2926	103 36 5	2936	102 4 32	2947	100 33 13	2959

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Dist.	XVh.	P. L. of Dist.	XVIIIh.	P. L. of Dist.	XXIh.	P. L. of Dist.
1	SUN	W.	109° 32' 19"	2557	111° 11' 59"	2554	112° 51' 44"	2559	114° 31' 35"	2555
	Venus	W.	67 21 55	2546	68 59 47	2541	70 37 46	2536	72 15 52	2531
	Aldebaran	W.	54 4 2	2250	55 51 15	2245	57 38 35	2241	59 26 1	2237
	Regulus	E.	26 5 38	2253	24 18 30	2250	22 31 17	2247	20 43 59	2243
	Spica	E.	79 49 28	2273	78 2 49	2269	76 16 4	2265	74 29 14	2262
2	SUN	W.	122 52 7	2540	124 32 25	2538	126 12 46	2536	127 53 9	2535
	Venus	W.	80 27 54	2513	82 6 33	2509	83 45 16	2507	85 24 2	2504
	Aldebaran	W.	68 24 34	2223	70 12 29	2219	72 0 28	2216	73 48 31	2214
	Spica	E.	65 33 55	2249	63 46 41	2247	61 59 24	2247	60 12 6	2246
	Saturn	E.	109 2 16	2219	107 14 17	2216	105 26 14	2214	103 38 7	2213
3	SUN	W.	136 15 17	2535	137 55 41	2537	139 36 3	2539	141 16 22	2542
	Venus	W.	93 38 21	2501	95 17 15	2501	96 56 8	2503	98 34 59	2504
	Aldebaran	W.	82 49 12	2213	84 37 22	2212	86 25 32	2212	88 13 41	2214
	Pollux	W.	39 53 55	2377	41 38 3	2366	43 22 26	2367	45 7 3	2360
	Spica	E.	51 15 35	2250	49 28 22	2253	47 41 13	2256	45 54 9	2260
	Saturn	E.	94 37 1	2208	92 48 46	2209	91 0 31	2209	89 12 17	2210
	Antares	E.	97 6 47	2275	95 20 11	2275	93 33 35	2276	91 47 0	2277
4	Venus	W.	106 48 28	2521	108 26 55	2525	110 5 16	2530	111 43 30	2535
	Aldebaran	W.	97 13 46	2227	99 1 34	2230	100 49 17	2233	102 36 55	2238
	Pollux	W.	53 52 12	2381	55 37 27	2380	57 22 43	2380	59 7 59	2381
	Spica	E.	37 0 35	2293	35 14 24	2302	33 28 27	2313	31 42 46	2325
	Saturn	E.	80 11 43	2223	78 23 48	2226	76 35 59	2230	74 48 16	2235
	Antares	E.	82 54 42	2290	81 8 28	2294	79 22 20	2299	77 36 19	2304
5	Pollux	W.	67 53 34	2347	69 38 25	2348	71 23 8	2348	73 7 43	2355
	Regulus	W.	31 25 38	2270	33 12 22	2277	34 58 55	2285	36 45 17	2292
	Saturn	E.	65 51 37	2264	64 4 45	2273	62 18 4	2279	60 31 34	2287
	Antares	E.	68 48 33	2341	67 3 33	2340	65 18 46	2349	63 34 13	2370
6	Pollux	W.	81 47 57	2406	83 31 21	2417	85 14 32	2426	86 57 29	2438
	Regulus	W.	45 34 3	2389	47 19 6	2345	49 3 55	2359	50 48 29	2370
	Saturn	E.	51 42 19	2235	49 57 11	2246	48 12 19	2258	46 27 44	2270
	Antares	E.	54 55 33	2433	53 12 45	2448	51 30 18	2463	49 48 13	2480
	α Aquilæ	E.	102 35 29	2535	101 1 47	2540	99 28 11	2545	97 54 42	2552
7	Pollux	W.	95 28 5	2500	97 9 18	2513	98 50 13	2527	100 30 49	2541
	Regulus	W.	59 27 7	2431	61 9 58	2444	62 52 30	2457	64 34 44	2471
	Saturn	E.	37 49 12	2435	36 6 27	2449	34 24 2	2464	32 41 58	2480
	Antares	E.	41 24 11	2560	39 44 49	2565	38 6 1	2582	36 27 49	2590
	α Aquilæ	E.	90 10 5	2905	88 37 53	2920	87 5 59	2934	85 34 23	2950
8	Pollux	W.	108 48 41	2518	110 27 12	2535	112 5 20	2551	113 43 6	2566
	Regulus	W.	73 0 59	2541	74 41 15	2556	76 21 10	2571	78 0 45	2585
	Saturn	E.	24 17 21	2567	22 37 41	2587	20 58 28	2599	19 19 45	2592
	Antares	E.	28 27 23	2847	26 53 56	2898	25 21 35	2957	23 50 28	3025
	α Aquilæ	E.	78 1 47	3044	76 32 29	3055	75 3 37	3088	73 35 13	3113
	Fomalhaut	E.	111 16 48	2892	109 44 19	2899	108 11 59	2907	106 39 49	2915
9	Regulus	W.	86 13 35	2560	87 51 8	2575	89 28 21	2591	91 5 13	2705
	Spica	W.	32 59 17	2784	34 35 12	2744	36 10 54	2753	37 46 23	2764
	α Aquilæ	E.	66 20 52	3248	64 55 40	3279	63 31 4	3312	62 7 6	3345
	Fomalhaut	E.	99 2 9	2973	97 31 21	2985	96 0 49	2997	94 30 33	3010

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Dist.	IIIh.	P. L. of Dist.	VIh.	P. L. of Dist.	IXh.	P. L. of Dist.
10	Regulus W.	92° 41' 46"	2730	94° 17' 59"	2736	95° 53' 52"	2760	97° 29' 26"	2763
	Spica W.	39 21 38	2775	40 56 39	2766	42 31 25	2796	44 5 56	2800
	α Aquilæ E.	60 43 46	2380	59 21 7	2418	57 59 11	2487	56 37 59	2497
	Fomalhaut E.	93 0 33	2024	91 30 50	2030	90 1 25	2068	88 32 18	2068
	α Pegasi E.	107 46 42	2045	106 17 25	2056	104 48 20	2064	103 19 26	2074
	Jupiter E.	116 59 41	2799	115 25 12	2814	113 51 2	2829	112 17 12	2844
	SUN E.	139 51 54	2066	138 23 26	2100	136 55 16	2114	135 27 24	2129
11	Spica W.	51 54 40	2869	53 27 39	2880	55 0 23	2893	56 32 51	2904
	α Aquilæ E.	50 4 4	2740	48 47 59	2708	47 32 55	2690	46 18 55	2676
	Fomalhaut E.	81 11 21	2146	79 44 7	2163	78 17 13	2179	76 50 39	2196
	α Pegasi E.	95 58 17	2131	94 30 45	2143	93 3 28	2155	91 36 25	2166
	Jupiter E.	104 32 40	2914	103 0 39	2927	101 28 55	2941	99 57 28	2954
	Mars E.	106 6 21	2111	104 38 25	2126	103 10 46	2139	101 43 24	2153
	SUN E.	128 12 29	2301	126 46 21	2216	125 20 30	2229	123 54 55	2243
12	Spica W.	64 11 40	2966	65 42 45	2980	67 13 37	2978	68 44 17	2986
	Saturn W.	20 59 18	2986	22 30 23	2968	24 1 20	2971	25 32 9	2977
	Antares W.	20 13 31	2476	21 34 22	2419	22 56 17	2372	24 19 5	2336
	Fomalhaut E.	69 42 51	2282	68 18 19	2301	66 54 9	2330	65 30 21	2338
	α Pegasi E.	84 24 55	2231	82 59 22	2243	81 34 4	2258	80 9 1	2269
	Jupiter E.	92 24 10	2914	90 54 15	2926	89 24 33	2935	87 55 4	2945
	Mars E.	94 30 29	2216	93 4 38	2227	91 39 1	2238	90 13 37	2248
13	SUN E.	116 50 51	2306	115 26 45	2316	114 2 52	2327	112 39 12	2336
	Spica W.	76 14 48	2030	77 44 24	2037	79 13 51	2044	80 43 9	2050
	Saturn W.	33 4 17	2008	34 34 20	2014	36 4 15	2021	37 34 2	2026
	Antares W.	31 21 17	2228	32 46 44	2226	34 12 24	2216	35 38 14	2209
	Fomalhaut E.	58 36 55	2441	57 15 25	2433	55 54 20	2437	54 33 41	2413
	α Pegasi E.	73 7 32	2384	71 44 0	2347	70 20 43	2360	68 57 41	2374
	Jupiter E.	80 30 36	2901	79 2 15	2908	77 34 3	2906	76 5 59	2912
14	Mars E.	83 9 35	2295	81 45 18	2304	80 21 11	2312	78 57 13	2319
	SUN E.	105 43 50	2386	104 21 17	2394	102 58 54	2401	101 36 39	2408
	Spica W.	88 7 53	2076	89 36 32	2080	91 5 6	2083	92 33 36	2086
	Saturn W.	45 1 26	2047	46 30 40	2051	47 59 50	2053	49 28 57	2056
	Antares W.	42 49 7	2197	44 15 32	2183	45 42 1	2180	47 8 34	2178
	Fomalhaut E.	47 57 37	2663	46 40 0	2687	45 22 59	2724	44 6 37	2764
	α Pegasi E.	62 6 29	2446	60 45 4	2461	59 23 56	2477	58 3 6	2493
15	Jupiter E.	68 47 34	2198	67 20 10	2143	65 52 51	2145	64 25 36	2148
	Mars E.	71 59 14	2346	70 35 56	2351	69 12 43	2354	67 49 34	2356
	SUN E.	94 47 14	2437	93 25 39	2441	92 4 9	2445	90 42 43	2447
	Spica W.	99 55 28	2093	101 23 46	2093	102 52 4	2093	104 20 22	2092
	Saturn W.	56 54 1	2090	58 22 59	2080	59 51 58	2069	61 20 58	2057
	Antares W.	54 22 8	2163	55 49 2	2169	57 16 0	2166	58 43 2	2153
	α Pegasi E.	51 23 47	2369	50 5 1	2311	48 46 39	2336	47 28 44	2363
16	Jupiter E.	57 10 3	2155	55 43 0	2166	54 15 57	2166	52 48 54	2153
	Mars E.	60 54 31	2365	59 31 34	2366	58 8 37	2366	56 45 40	2363
	SUN E.	83 56 13	2455	82 34 59	2455	81 13 45	2455	79 52 31	2454
	Saturn W.	68 46 35	2044	70 15 53	2040	71 45 16	2035	73 14 45	2030
	Antares W.	65 59 26	2129	67 27 0	2124	68 54 41	2118	70 22 29	2119
	α Pegasi E.	41 7 6	2338	39 52 43	2394	38 39 7	2394	37 26 22	2392
	Jupiter E.	45 33 5	2141	44 5 45	2137	42 38 20	2133	41 10 50	2128

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Dist.	XVh.	P. L. of Dist.	XVIIIh.	P. L. of Dist.	XXIh.	P. L. of Dist.
10	Regulus W.	99° 4' 42"	2778	100° 39' 39"	2792	102° 14' 17"	2806	103° 48' 37"	2820
	Spica W.	45 40 12	2821	47 14 12	2833	48 47 57	2846	50 21 26	2857
	α Aquilæ E.	55 17 32	2841	53 57 53	2857	52 39 4	2836	51 21 7	2868
	Fomalhaut E.	87 3 29	2883	85 34 59	2898	84 6 47	2814	82 38 54	2830
	α Pegasi E.	101 50 45	2886	100 22 17	2896	98 54 3	2898	97 26 3	2819
	Jupiter E.	110 43 41	2896	109 10 28	2873	107 37 34	2867	106 4 58	2901
	SUN E.	133 59 50	2148	132 32 33	2160	131 5 34	2173	129 38 53	2188
11	Spica W.	58 5 5	2916	59 37 4	2927	61 8 49	2937	62 40 21	2947
	α Aquilæ E.	45 6 2	2996	43 54 20	4075	42 43 54	4169	41 34 49	4249
	Fomalhaut E.	75 24 25	2913	73 58 31	2920	72 32 57	2947	71 7 44	2968
	α Pegasi E.	90 9 37	2180	88 43 4	2193	87 16 46	2206	85 50 43	2218
	Jupiter E.	98 26 18	2967	96 55 24	2979	95 24 45	2990	93 54 20	3002
	Mars E.	100 16 18	2106	98 49 28	2178	97 22 53	2192	95 56 34	2204
	SUN E.	122 29 36	2266	121 4 33	2260	119 39 45	2261	118 15 11	2293
12	Spica W.	70 14 45	2967	71 45 2	2995	73 15 8	2914	74 45 3	3022
	Saturn W.	27 2 50	2964	28 33 23	2960	30 3 49	2996	31 34 7	3002
	Antares W.	25 42 35	2906	27 6 39	2922	28 31 11	2964	29 56 5	2946
	Fomalhaut E.	64 6 54	2266	62 43 49	2278	61 21 7	2299	59 58 49	2420
	α Pegasi E.	78 44 13	2922	77 19 40	2924	75 55 22	2907	74 31 19	2921
	Jupiter E.	86 25 47	2955	84 56 42	2966	83 27 49	2973	81 59 7	2982
	Mars E.	88 48 25	2949	87 23 25	2960	85 58 37	2979	84 34 1	2988
13	SUN E.	111 15 45	2240	109 52 30	2266	108 29 26	2268	107 6 33	2277
	Spica W.	82 12 20	2966	83 41 23	2992	85 10 19	2907	86 39 9	2972
	Saturn W.	39 3 42	2981	40 33 16	2985	42 2 45	2940	43 32 8	2944
	Antares W.	37 4 12	2904	38 30 17	2198	39 56 29	2198	41 22 46	2190
	Fomalhaut E.	53 13 30	2267	51 53 47	2264	50 34 33	2261	49 15 49	2261
	α Pegasi E.	67 34 55	2268	66 12 25	2401	64 50 10	2416	63 28 11	2431
	Jupiter E.	74 38 4	2119	73 10 17	2124	71 42 37	2129	70 15 3	2133
14	Mars E.	77 33 23	2226	76 9 41	2232	74 46 6	2237	73 22 37	2242
	SUN E.	100 14 32	2416	98 52 33	2421	97 30 40	2427	96 8 54	2422
	Spica W.	94 2 3	2969	95 30 27	2990	96 58 49	2991	98 27 9	2992
	Saturn W.	50 58 1	2967	52 27 3	2969	53 56 3	2960	55 25 2	2960
	Antares W.	48 35 10	2176	50 1 49	2172	51 28 32	2169	52 55 18	2166
	Fomalhaut E.	42 50 57	2266	41 36 1	2263	40 21 53	2263	39 8 36	2268
	α Pegasi E.	56 42 34	2211	55 22 22	2228	54 2 29	2247	52 42 57	2267
15	Jupiter E.	62 58 25	2161	61 31 17	2163	60 4 11	2164	58 37 7	2164
	Mars E.	66 26 29	2260	65 3 27	2262	63 40 27	2264	62 17 29	2264
	SUN E.	89 21 20	2420	88 0 0	2423	86 38 43	2424	85 17 28	2424
	Spica W.	105 48 41	2991	107 17 1	2989	108 45 24	2987	110 13 49	2988
	Saturn W.	62 50 0	2966	64 19 4	2963	65 48 11	2961	67 17 21	2947
	Antares W.	60 10 8	2149	61 37 19	2143	63 4 36	2139	64 31 58	2124
	α Pegasi E.	46 11 18	2992	44 54 23	2723	43 38 0	2767	42 22 13	2796
16	Jupiter E.	51 21 49	2162	49 54 42	2150	48 27 33	2148	47 0 21	2144
	Mars E.	55 22 41	2261	53 59 40	2260	52 36 37	2267	51 13 31	2264
	SUN E.	78 31 15	2422	77 9 57	2420	75 48 37	2448	74 27 15	2446
	Saturn W.	74 44 21	2925	76 14 3	2919	77 43 52	2914	79 13 48	2907
	Antares W.	71 50 24	2106	73 18 27	2099	74 46 38	2091	76 14 58	2084
	α Pegasi E.	36 14 35	4090	35 3 53	4122	33 54 22	4216	32 46 11	4213
	Jupiter E.	39 43 14	2122	38 15 32	2117	36 47 43	2110	35 19 46	2106

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
16	Mars	E.	49° 50' 22"	3351	48° 27' 9"	3346	47° 3' 51"	3342	45° 40' 28"	3337
	SUN	E.	73 5 50	3441	71 44 20	3437	70 22 45	3432	69 1 5	3428
17	Saturn	W.	80 43 52	3000	82 14 5	2992	83 44 28	2984	85 15 1	2976
	Antares	W.	77 43 27	3077	79 12 5	3069	80 40 53	3060	82 9 51	3052
	α Aquilæ	W.	37 35 44	4595	38 38 12	4485	39 42 17	4386	40 47 51	4296
	Jupiter	E.	33 51 42	3098	32 23 30	3091	30 55 9	3083	29 26 39	3075
	Mars	E.	38 41 57	3305	37 17 52	3299	35 53 39	3291	34 29 17	3282
	SUN	E.	62 11 14	3397	60 48 54	3390	59 26 26	3382	58 3 49	3373
18	Saturn	W.	92 50 24	2931	94 22 4	2921	95 53 56	2911	97 26 1	2901
	Antares	W.	89 37 24	3006	91 7 29	2996	92 37 47	2986	94 8 17	2976
	α Aquilæ	W.	46 34 51	3295	47 47 34	3279	49 1 15	3266	50 15 50	3256
	SUN	E.	51 8 12	3328	49 44 33	3318	48 20 42	3308	46 56 40	3298
19	Saturn	W.	105 9 51	2845	106 43 20	2832	108 17 5	2821	109 51 5	2809
	Antares	W.	101 44 6	2922	103 15 57	2911	104 48 2	2901	106 20 20	2890
	α Aquilæ	W.	56 40 57	3457	58 0 7	3431	59 19 57	3407	60 40 24	3404
	SUN	E.	39 53 26	3344	38 28 9	3334	37 2 40	3323	35 36 58	3313
24	SUN	W.	21 30 3	2813	23 4 14	2794	24 38 50	2777	26 13 48	2762
	Regulus	E.	92 32 13	2404	90 48 44	2397	89 5 5	2380	87 21 16	2363
25	SUN	W.	34 13 3	2704	35 49 37	2696	37 26 22	2688	39 3 18	2681
	Regulus	E.	78 39 45	2352	76 55 1	2346	75 10 9	2341	73 25 9	2336
26	SUN	W.	47 10 15	2650	48 48 2	2646	50 25 55	2642	52 3 53	2638
	Aldebaran	W.	15 30 24	2317	17 15 58	2313	19 1 39	2309	20 47 25	2307
	Regulus	E.	64 38 32	2316	62 52 56	2313	61 7 15	2309	59 21 29	2307
27	SUN	W.	60 14 59	2622	61 53 24	2620	63 31 52	2618	65 10 23	2615
	Aldebaran	W.	29 37 10	2296	31 23 16	2294	33 9 25	2291	34 55 37	2290
	Venus	W.	16 41 57	3132	18 9 28	3080	19 38 39	2965	21 9 11	2933
	Regulus	E.	50 31 43	2295	48 45 38	2294	46 59 30	2292	45 13 19	2291
	Spica	E.	104 10 0	2319	102 24 28	2317	100 38 54	2315	98 53 17	2313
28	SUN	W.	73 23 28	2610	75 2 9	2610	76 40 50	2610	78 19 32	2610
	Aldebaran	W.	43 46 58	2287	45 33 17	2285	47 19 37	2286	49 5 57	2287
	Venus	W.	28 54 40	2787	30 29 25	2771	32 4 31	2764	33 39 56	2744
	Regulus	E.	36 22 4	2288	34 35 47	2287	32 49 29	2287	31 3 11	2288
	Spica	E.	90 4 43	2310	88 18 58	2309	86 33 12	2309	84 47 26	2308
29	SUN	W.	86 32 59	2612	88 11 38	2612	89 50 16	2614	91 28 52	2615
	Aldebaran	W.	57 57 30	2298	59 43 47	2299	61 30 2	2291	63 16 15	2291
	Venus	W.	41 40 18	2705	43 16 50	2701	44 53 28	2698	46 30 11	2694
	Spica	E.	75 58 44	2313	74 13 4	2314	72 27 25	2315	70 41 48	2317
	Saturn	E.	118 11 19	2275	116 24 44	2277	114 38 10	2277	112 51 37	2279
30	SUN	W.	99 41 25	2624	101 19 48	2626	102 58 8	2628	104 36 25	2631
	Aldebaran	W.	72 6 57	2299	73 52 58	2301	75 38 56	2302	77 24 52	2304
	Venus	W.	54 34 41	2685	56 11 41	2684	57 48 42	2684	59 25 43	2684
	Pollux	W.	29 39 57	2680	31 19 34	2645	32 59 45	2635	34 40 24	2608
	Spica	E.	61 54 28	2326	60 9 10	2332	58 23 57	2335	56 38 48	2336
	Saturn	E.	103 59 17	2285	102 12 55	2287	100 26 36	2289	98 40 20	2291
	Antares	E.	107 41 37	2365	105 57 13	2366	104 12 49	2367	102 28 27	2368

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
16	Mars E. Sun E.	44° 16' 59" 67 39 20	3333 3423	42° 53' 24" 66 17 29	3306 3416	41° 29' 43" 64 55 31	3319 3410	40° 5' 54" 63 33 26	3313 3404
17	Saturn W. Antares W. α Aquilæ W. Jupiter E. Mars E. Sun E.	86 45 44 83 39 0 41 54 48 27 57 59 33 4 45 56 41 2	3067 3043 4311 3067 3374 3365	88 16 38 85 8 19 43 3 4 26 29 9 31 40 3 55 18 5	3069 3064 4135 3069 3365 3366	89 47 42 86 37 49 44 12 32 25 0 9 30 15 11 53 54 58	3069 3033 4064 3060 3367 3346	91 18 57 88 7 31 45 23 9 23 30 58 28 50 9 52 31 40	3041 3016 3998 3041 3247 3338
18	Saturn W. Antares W. α Aquilæ W. Sun E.	96 58 19 93 39 0 51 31 18 45 32 26	3090 3065 3728 3398	100 30 51 97 9 56 52 47 35 44 8 0	3079 3064 3084 3276	102 3 37 98 41 6 54 4 39 42 43 21	3069 3044 3643 3366	103 36 37 100 12 29 55 22 27 41 18 30	3067 3033 3604 3355
19	Saturn W. Antares W. α Aquilæ W. Sun E.	111 25 21 107 52 52 62 1 27 34 11 4	3709 3079 3434 3308	112 59 52 109 25 38 63 23 5 32 44 58	3765 3067 3406 3193	114 34 39 110 58 39 64 45 15 31 18 40	3773 3066 3376 3183	116 9 42 112 31 54 66 7 57 29 52 11	3760 3046 3351 3174
24	Sun W. Regulus E.	27 49 6 85 37 17	2748 2876	29 24 42 83 53 8	2735 2869	31 0 35 82 8 49	2726 2863	32 36 42 80 24 21	2714 2357
25	Sun W. Regulus E.	40 40 24 71 40 2	2674 3333	42 17 39 69 54 49	2667 3337	43 55 3 68 9 29	2661 3323	45 32 35 66 24 3	2655 3330
26	Sun W. Aldebaran W. Regulus E.	53 41 56 22 33 15 57 35 39	3034 3004 3004	55 20 5 24 19 8 55 49 45	3030 3003 3301	56 58 19 26 5 5 54 3 47	3027 3209 3209	58 36 37 27 51 6 52 17 46	3024 3207 3206
27	Sun W. Aldebaran W. Venus W. Regulus E. Spica E.	66 48 57 36 41 51 22 40 48 43 27 6 97 7 37	2614 3389 3091 3390 3313	68 27 33 38 28 6 24 13 18 41 40 52 95 21 55	2613 3289 3067 3399 3311	70 6 10 40 14 22 25 46 32 39 54 37 93 36 12	2613 3397 3030 3399 3311	71 44 48 42 0 40 27 20 21 38 8 21 91 50 28	2611 3387 3067 3398 3310
28	Sun W. Aldebaran W. Venus W. Regulus E. Spica E.	79 58 14 50 52 16 35 15 37 29 16 54 83 1 40	2610 3287 3784 3398 3310	81 36 56 52 38 35 36 51 32 27 30 37 81 15 55	2610 3287 3796 3399 3310	83 15 38 54 24 54 38 27 38 25 44 21 79 30 10	2610 3287 3718 3399 3311	84 54 19 56 11 12 40 3 54 23 58 7 77 44 26	2611 3287 3712 3391 3313
29	Sun W. Aldebaran W. Venus W. Spica E. Saturn E.	93 7 27 65 2 27 48 6 59 68 56 14 111 5 6	2616 3392 3091 3330 3379	94 46 0 66 48 38 49 43 51 67 10 43 109 18 36	2618 3394 3089 3323 3390	96 24 31 68 34 47 51 20 45 65 25 15 107 32 7	2620 3396 3087 3334 3392	98 2 59 70 20 53 52 57 42 63 39 50 105 45 41	2621 3397 3086 3336 3393
30	Sun W. Aldebaran W. Venus W. Pollux W. Spica E. Saturn E. Antares E.	106 14 38 79 10 45 61 2 44 36 21 26 54 53 44 96 54 7 100 44 8	2623 3307 3085 3494 3343 3398 3371	107 52 48 80 56 34 62 39 44 38 2 48 53 8 46 95 7 57 98 59 51	2626 3309 3086 3492 3346 3396 3372	109 30 54 82 42 20 64 16 43 39 44 26 51 23 54 93 21 50 97 15 36	2640 3313 3087 3473 3361 3398 3374	111 8 55 84 28 2 65 53 41 41 26 18 49 39 9 91 35 47 95 31 24	2643 3315 3088 3465 3356 3390 3376

AT GREENWICH APPARENT NOON.

THE SUN'S										Sideral Time of the Semi- diameter passing the Merid- ian.	Equation of Time, to be subtracted from Apparent Time.	Diff. for 1 hour
Day of the Week.	Day of the Month.	Apparent Right Ascension.		Diff. for 1 hour.	Apparent Declination.		Diff. for 1 hour.	Semi- diameter.				
Fri.	1	^h 2 ^m 35 ^s 41.05	9.551	N.15° 14' 48.9"	45.02	15' 54.07"	66.10	^m 3 ^s 4.37	0.305			
Sat.	2	2 39 30.53	9.573	15 32 41.7	44.38	15 53.84	66.18	3 11.43	0.283			
Sun.	3	2 43 20.54	9.595	15 50 19.1	43.73	15 53.61	66.26	3 17.95	0.260			
Mon.	4	2 47 11.09	9.618	16 7 40.7	43.06	15 53.39	66.34	3 23.94	0.238			
Tues.	5	2 51 2.19	9.641	16 24 46.2	42.39	15 53.16	66.42	3 29.38	0.215			
Wed.	6	2 54 53.86	9.664	16 41 35.3	41.70	15 52.94	66.50	3 34.26	0.191			
Thur.	7	2 58 46.10	9.688	16 58 7.8	41.00	15 52.72	66.58	3 38.56	0.168			
Fri.	8	3 2 38.91	9.712	17 14 23.4	40.29	15 52.50	66.67	3 42.30	0.144			
Sat.	9	3 6 32.29	9.736	17 30 21.8	39.57	15 52.28	66.75	3 45.47	0.120			
Sun.	10	3 10 26.25	9.761	17 46 2.6	38.83	15 52.06	66.84	3 48.06	0.095			
Mon.	11	3 14 20.80	9.786	18 1 25.8	38.09	15 51.85	66.92	3 50.05	0.070			
Tues.	12	3 18 15.96	9.811	18 16 31.0	37.33	15 51.64	67.00	3 51.44	0.045			
Wed.	13	3 22 11.72	9.836	18 31 17.8	36.56	15 51.43	67.08	3 52.24	0.020			
Thur.	14	3 26 8.06	9.860	18 45 45.9	35.77	15 51.23	67.16	3 52.45	0.004			
Fri.	15	3 30 4.99	9.885	18 59 55.1	34.98	15 51.03	67.24	3 52.07	0.028			
Sat.	16	3 34 2.50	9.909	19 13 45.1	34.17	15 50.83	67.32	3 51.12	0.052			
Sun.	17	3 38 0.60	9.933	19 27 15.6	33.36	15 50.63	67.40	3 49.59	0.076			
Mon.	18	3 41 59.27	9.957	19 40 26.5	32.53	15 50.44	67.48	3 47.49	0.100			
Tues.	19	3 45 58.51	9.980	19 53 17.4	31.70	15 50.25	67.56	3 44.81	0.123			
Wed.	20	3 49 58.31	10.003	20 5 48.1	30.85	15 50.07	67.63	3 41.56	0.146			
Thur.	21	3 53 58.66	10.025	20 17 58.3	29.98	15 49.89	67.71	3 37.77	0.168			
Fri.	22	3 57 59.54	10.047	20 29 47.6	29.11	15 49.72	67.78	3 33.46	0.190			
Sat.	23	4 2 0.94	10.068	20 41 15.9	28.23	15 49.55	67.86	3 28.63	0.212			
Sun.	24	4 6 2.86	10.089	20 52 23.0	27.34	15 49.39	67.93	3 23.28	0.233			
Mon.	25	4 10 5.28	10.109	21 3 8.5	26.44	15 49.23	68.00	3 17.43	0.253			
Tues.	26	4 14 8.18	10.129	21 13 32.3	25.53	15 49.08	68.07	3 11.12	0.273			
Wed.	27	4 18 11.52	10.148	21 23 34.1	24.61	15 48.93	68.14	3 4.35	0.292			
Thur.	28	4 22 15.31	10.167	21 33 13.8	23.68	15 48.78	68.20	2 57.13	0.310			
Fri.	29	4 26 19.55	10.185	21 42 30.9	22.74	15 48.64	68.26	2 49.47	0.328			
Sat.	30	4 30 24.22	10.202	21 51 25.4	21.80	15 48.50	68.32	2 41.38	0.345			
Sun.	31	4 34 29.30	10.219	21 59 57.2	20.84	15 48.37	68.38	2 32.89	0.362			
Mon.	32	4 38 34.77	10.235	N.22° 8' 6.0"	19.88	15 48.24	68.44	2 24.01	0.378			

NOTE. — Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sideral Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be added to Mean Time.	Diff. for 1 hour.	Sidereal Time.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.			
		^h ^m ^s	^s	[°] ['] ["]	^r	^m ^s	^s	^h ^m ^s
Fri.	1	2 35 41.54	9.551	N.15 14 51.2	45.02	3 4.39	0.305	2 38 45.93
Sat.	2	2 39 31.04	9.573	15 32 44.0	44.38	3 11.45	0.283	2 42 42.49
Sun.	3	2 43 21.07	9.595	15 50 21.5	43.73	3 17.97	0.260	2 46 39.04
Mon.	4	2 47 11.64	9.618	16 7 43.3	43.06	3 23.96	0.238	2 50 35.60
Tues.	5	2 51 2.76	9.641	16 24 48.7	42.39	3 29.39	0.215	2 54 32.15
Wed.	6	2 54 54.44	9.664	16 41 37.8	41.70	3 34.27	0.191	2 58 28.71
Thur.	7	2 58 46.69	9.688	16 58 10.3	41.00	3 38.57	0.168	3 2 25.26
Fri.	8	3 2 39.51	9.712	17 14 25.9	40.29	3 42.31	0.144	3 6 21.82
Sat.	9	3 6 32.90	9.736	17 30 24.3	39.57	3 45.47	0.120	3 10 18.37
Sun.	10	3 10 26.87	9.761	17 46 5.1	38.83	3 48.06	0.095	3 14 14.93
Mon.	11	3 14 21.43	9.786	18 1 28.3	38.09	3 50.05	0.070	3 18 11.48
Tues.	12	3 18 16.59	9.811	18 16 33.4	37.33	3 51.44	0.045	3 22 8.03
Wed.	13	3 22 12.35	9.836	18 31 20.1	36.56	3 52.24	0.020	3 26 4.59
Thur.	14	3 26 8.70	9.860	18 45 48.1	35.77	3 52.45	0.004	3 30 1.15
Fri.	15	3 30 5.63	9.885	18 59 57.3	34.98	3 52.07	0.028	3 33 57.70
Sat.	16	3 34 3.14	9.909	19 13 47.2	34.17	3 51.12	0.052	3 37 54.26
Sun.	17	3 38 1.23	9.933	19 27 17.7	33.36	3 49.59	0.076	3 41 50.82
Mon.	18	3 41 59.90	9.957	19 40 28.6	32.53	3 47.48	0.100	3 45 47.38
Tues.	19	3 45 59.14	9.980	19 53 19.4	31.70	3 44.78	0.123	3 49 43.92
Wed.	20	3 49 58.93	10.003	20 5 50.0	30.85	3 41.55	0.146	3 53 40.48
Thur.	21	3 53 59.27	10.025	20 18 0.1	29.98	3 37.76	0.168	3 57 37.03
Fri.	22	3 58 0.14	10.047	20 29 49.3	29.11	3 33.45	0.190	4 1 33.59
Sat.	23	4 2 1.53	10.068	20 41 17.5	28.23	3 28.62	0.212	4 5 30.15
Sun.	24	4 6 3.43	10.089	20 52 24.5	27.34	3 23.27	0.233	4 9 26.70
Mon.	25	4 10 5.83	10.109	21 3 10.0	26.44	3 17.43	0.253	4 13 23.26
Tues.	26	4 14 8.71	10.129	21 13 33.7	25.53	3 11.10	0.273	4 17 19.81
Wed.	27	4 18 12.04	10.148	21 23 35.4	24.61	3 4.33	0.292	4 21 16.37
Thur.	28	4 22 15.81	10.167	21 33 14.9	23.68	2 57.12	0.310	4 25 12.93
Fri.	29	4 26 20.03	10.185	21 42 31.9	22.74	2 49.45	0.328	4 29 9.48
Sat.	30	4 30 24.68	10.202	21 51 26.3	21.80	2 41.36	0.345	4 33 6.04
Sun.	31	4 34 29.73	10.219	21 59 58.1	20.84	2 32.87	0.362	4 37 2.60
Mon.	32	4 38 35.17	10.235	N.22 8 6.8	19.88	2 23.98	0.378	4 40 59.15

NOTE. — The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

AT GREENWICH MEAN NOON.

THE SUN'S										
Day of the Month.	Day of the Year.	True LONGITUDE.		Diff. for 1 hour.	LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal Ob.		
		λ	λ'							
1	122	41° 21' 46.4	21° 39.3	145.37	+0.21	0.0035956	43.5	21 17 44.16		
2	123	42 19 54.6	19 47.3	145.29	0.35	.0036996	43.1	21 13 48.25		
3	124	43 18 0.5	17 53.2	145.21	0.48	.0038027	42.8	21 9 52.35		
4	125	44 16 4.6	15 57.2	145.13	0.59	.0039052	42.5	21 5 56.44		
5	126	45 14 6.9	13 59.4	145.06	0.68	.0040071	42.3	21 2 0.53		
6	127	46 12 7.6	12 0.0	144.99	0.75	.0041084	42.1	20 58 4.62		
7	128	47 10 6.6	9 58.9	144.92	0.79	.0042091	41.8	20 54 8.71		
8	129	48 8 4.0	7 56.1	144.85	0.80	.0043091	41.4	20 50 12.81		
9	130	49 5 59.9	5 51.8	144.79	0.77	.0044083	41.1	20 46 16.90		
10	131	50 3 54.4	3 46.1	144.73	0.72	.0045067	40.7	20 42 20.99		
11	132	51 1 47.5	1 39.2	144.68	0.64	.0046042	40.4	20 38 25.09		
12	133	51 59 39.4	59 31.0	144.63	0.55	.0047007	40.0	20 34 29.18		
13	134	52 57 30.1	57 21.5	144.58	0.43	.0047962	39.5	20 30 33.27		
14	135	53 55 19.6	55 10.8	144.53	0.30	.0048904	39.0	20 26 37.36		
15	136	54 53 7.9	52 59.0	144.48	0.17	.0049832	38.3	20 22 41.44		
16	137	55 50 55.0	50 46.0	144.43	+0.04	.0050742	37.5	20 18 45.53		
17	138	56 48 40.9	48 31.8	144.38	-0.07	.0051634	36.7	20 14 49.62		
18	139	57 46 25.7	46 16.4	144.34	0.17	.0052508	35.9	20 10 53.71		
19	140	58 44 9.4	43 59.9	144.29	0.26	.0053363	35.0	20 6 57.80		
20	141	59 41 51.9	41 42.3	144.24	0.31	.0054197	34.3	20 3 1.89		
21	142	60 39 33.2	39 23.5	144.19	0.33	.0055009	33.4	19 59 5.98		
22	143	61 37 13.2	37 3.4	144.13	0.32	.0055799	32.5	19 55 10.07		
23	144	62 34 51.8	34 41.9	144.08	0.28	.0056566	31.6	19 51 14.17		
24	145	63 32 29.1	32 19.0	144.02	0.21	.0057312	30.7	19 47 18.26		
25	146	64 30 5.1	29 54.8	143.97	0.12	.0058037	29.8	19 43 22.35		
26	147	65 27 39.8	27 29.4	143.91	-0.01	.0058740	28.9	19 39 26.44		
27	148	66 25 13.2	25 2.6	143.85	+0.12	.0059422	28.0	19 35 30.52		
28	149	67 22 45.1	22 34.3	143.79	0.26	.0060084	27.2	19 31 34.61		
29	150	68 20 15.6	20 4.6	143.73	0.39	.0060728	26.5	19 27 38.70		
30	151	69 17 44.8	17 33.7	143.68	0.52	.0061354	25.8	19 23 42.79		
31	152	70 15 12.8	15 1.6	143.63	0.62	.0061965	25.2	19 19 46.88		
32	153	71 12 39.5	12 28.1	143.58	+0.71	0.0062561	24.6	19 15 50.97		

NOTE: λ corresponds to the true equinox of the date, λ' to the mean equinox of January 00.

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	THE MOON'S								
	SEMI- DIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	
1	16' 7.3	16' 5.6	59' 3.7	-0.47	58' 57.4	-0.58	^h 8 ^m 2.5	^m 2.18	^d 8.7
2	16 3.6	16 1.2	58 49.8	0.63	58 41.0	0.79	8 54.0	2.12	9.7
3	15 58.4	15 55.4	58 31.0	0.89	58 19.6	1.00	9 44.3	2.08	10.7
4	15 51.9	15 48.2	58 7.1	1.10	57 53.3	1.19	10 34.0	2.06	11.7
5	15 44.2	15 39.9	57 38.4	1.28	57 22.7	1.35	11 23.6	2.07	12.7
6	15 35.4	15 30.7	57 6.1	1.40	56 49.0	1.44	12 13.3	2.08	13.7
7	15 25.9	15 21.2	56 31.6	1.46	56 14.1	1.45	13 3.3	2.09	14.7
8	15 16.5	15 11.9	55 56.8	1.42	55 40.0	1.37	13 53.5	2.09	15.7
9	15 7.6	15 3.5	55 24.0	1.29	55 9.1	1.19	14 43.4	2.07	16.7
10	14 59.8	14 56.5	54 55.5	1.06	54 43.6	0.92	15 32.6	2.03	17.7
11	14 53.8	14 51.6	54 33.4	0.76	54 25.3	0.58	16 20.8	1.98	18.7
12	14 50.0	14 49.0	54 19.4	-0.39	54 15.9	-0.19	17 7.7	1.93	19.7
13	14 48.7	14 49.1	54 14.8	+0.01	54 16.2	+0.22	17 53.4	1.88	20.7
14	14 50.1	14 51.9	54 20.2	0.44	54 26.7	0.65	18 38.1	1.85	21.7
15	14 54.4	14 57.6	54 35.8	0.86	54 47.4	1.06	19 22.3	1.84	22.7
16	15 1.3	15 5.7	55 1.3	1.25	55 17.4	1.43	20 6.5	1.85	23.7
17	15 10.7	15 16.1	55 35.5	1.58	55 55.3	1.71	20 51.5	1.90	24.7
18	15 21.8	15 27.9	56 16.5	1.81	56 38.8	1.88	21 38.0	1.98	25.7
19	15 34.2	15 40.5	57 1.8	1.92	57 24.9	1.92	22 26.8	2.09	26.7
20	15 46.7	15 52.8	57 47.8	1.88	58 10.1	1.80	23 18.5	2.22	27.7
21	15 58.5	16 3.8	58 31.1	1.68	58 50.5	1.53	δ		28.7
22	16 8.5	16 12.6	59 7.8	1.35	59 22.8	1.14	0 13.3	2.35	0.2
23	16 15.9	16 18.5	59 35.1	0.91	59 44.6	0.67	1 10.9	2.45	1.2
24	16 20.3	16 21.3	59 51.1	+0.42	59 54.7	+0.18	2 10.4	2.50	2.2
25	16 21.4	16 20.9	59 55.4	-0.05	59 53.5	-0.26	3 10.3	2.48	3.2
26	16 19.7	16 18.0	59 49.1	0.45	59 42.6	0.62	4 9.1	2.41	4.2
27	16 15.7	16 12.9	59 34.2	0.77	59 24.1	0.89	5 5.8	2.31	5.2
28	16 9.8	16 6.4	59 12.7	0.99	59 0.3	1.07	5 59.9	2.20	6.2
29	16 2.8	15 59.1	58 47.1	1.13	58 33.2	1.17	6 51.7	2.11	7.2
30	15 55.2	15 51.2	58 19.0	1.20	58 4.4	1.22	7 41.6	2.05	8.2
31	15 47.2	15 43.1	57 49.6	1.24	57 34.7	1.25	8 30.4	2.02	9.2
32	15 39.0	15 34.9	57 19.6	-1.25	57 4.6	-1.25	9 18.9	2.02	10.2

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
FRIDAY 1.					SUNDAY 3.				
0	10 24 18.49	2.2886	N. 10 7 41.2	9.887	0	12 11 22.73	2.1892	N. 1 29 11.5	11.314
1	10 26 35.71	2.2887	9 57 48.0	9.914	1	12 13 33.80	2.1889	1 17 52.6	11.317
2	10 28 52.77	2.2889	9 47 51.5	9.969	2	12 15 44.80	2.1896	1 6 33.5	11.319
3	10 31 9.66	2.2901	9 37 51.7	10.024	3	12 17 55.72	2.1813	0 55 14.3	11.320
4	10 33 26.38	2.2778	9 27 48.6	10.077	4	12 20 6.56	2.1801	0 43 55.1	11.319
5	10 35 42.93	2.2745	9 17 42.4	10.130	5	12 22 17.33	2.1790	0 32 35.9	11.318
6	10 37 59.32	2.2718	9 7 33.0	10.181	6	12 24 28.04	2.1779	0 21 16.9	11.315
7	10 40 15.55	2.2691	8 57 20.6	10.231	7	12 26 38.68	2.1768	N. 0 9 58.1	11.312
8	10 42 31.61	2.2664	8 47 5.2	10.280	8	12 28 49.26	2.1757	S. 0 1 20.5	11.307
9	10 44 47.52	2.2638	8 36 46.9	10.328	9	12 30 59.78	2.1747	0 12 38.8	11.302
10	10 47 3.27	2.2612	8 26 25.8	10.374	10	12 33 10.23	2.1737	0 23 56.7	11.295
11	10 49 18.86	2.2586	8 16 1.9	10.420	11	12 35 20.62	2.1728	0 35 14.2	11.287
12	10 51 34.30	2.2560	8 5 35.4	10.464	12	12 37 30.96	2.1718	0 46 31.1	11.278
13	10 53 49.58	2.2534	7 55 6.2	10.508	13	12 39 41.24	2.1709	0 57 47.5	11.268
14	10 56 4.71	2.2509	7 44 34.4	10.550	14	12 41 51.47	2.1701	1 9 3.2	11.257
15	10 58 19.69	2.2484	7 34 0.1	10.592	15	12 44 1.65	2.1693	1 20 18.3	11.245
16	11 0 34.52	2.2460	7 23 23.4	10.632	16	12 46 11.79	2.1685	1 31 32.6	11.232
17	11 2 49.21	2.2436	7 12 44.3	10.671	17	12 48 21.88	2.1678	1 42 46.1	11.218
18	11 5 3.75	2.2412	7 2 2.9	10.708	18	12 50 31.93	2.1671	1 53 58.7	11.202
19	11 7 18.15	2.2388	6 51 19.3	10.744	19	12 52 41.93	2.1664	2 5 10.4	11.186
20	11 9 32.41	2.2365	6 40 33.6	10.779	20	12 54 51.90	2.1656	2 16 21.0	11.168
21	11 11 46.53	2.2342	6 29 45.8	10.814	21	12 57 1.83	2.1649	2 27 30.6	11.150
22	11 14 0.52	2.2319	6 18 55.9	10.847	22	12 59 11.72	2.1646	2 38 39.0	11.130
23	11 16 14.37	2.2297	N. 6 8 4.1	10.879	23	13 1 21.58	2.1641	S. 2 49 46.2	11.110
SATURDAY 2.					MONDAY 4.				
0	11 18 28.08	2.2276	N. 5 57 10.4	10.910	0	13 3 31.41	2.1636	S. 3 0 52.2	11.088
1	11 20 41.66	2.2253	5 46 14.9	10.940	1	13 5 41.20	2.1630	3 11 56.8	11.066
2	11 22 55.12	2.2232	5 35 17.6	10.968	2	13 7 50.97	2.1625	3 23 0.1	11.042
3	11 25 8.45	2.2211	5 24 18.7	10.996	3	13 10 0.71	2.1621	3 34 1.9	11.018
4	11 27 21.65	2.2190	5 13 18.1	11.022	4	13 12 10.43	2.1617	3 45 2.3	10.992
5	11 29 34.73	2.2170	5 2 16.0	11.048	5	13 14 20.13	2.1614	3 56 1.1	10.966
6	11 31 47.69	2.2160	4 51 12.4	11.072	6	13 16 29.80	2.1611	4 6 58.2	10.938
7	11 34 0.53	2.2130	4 40 7.4	11.095	7	13 18 39.46	2.1606	4 17 53.7	10.910
8	11 36 13.25	2.2111	4 29 1.0	11.116	8	13 20 49.10	2.1606	4 28 47.4	10.880
9	11 38 25.86	2.2092	4 17 53.4	11.137	9	13 22 58.72	2.1602	4 39 39.3	10.849
10	11 40 38.36	2.2073	4 6 44.5	11.156	10	13 25 8.33	2.1600	4 50 29.3	10.818
11	11 42 50.74	2.2056	3 55 34.5	11.176	11	13 27 17.93	2.1599	5 1 17.4	10.786
12	11 45 3.02	2.2037	3 44 23.5	11.192	12	13 29 27.52	2.1597	5 12 3.6	10.752
13	11 47 15.19	2.2020	3 33 11.4	11.209	13	13 31 37.10	2.1596	5 22 47.7	10.718
14	11 49 27.26	2.2003	3 21 58.4	11.224	14	13 33 46.68	2.1595	5 33 29.7	10.682
15	11 51 39.23	2.1987	3 10 44.6	11.238	15	13 35 56.25	2.1594	5 44 9.6	10.646
16	11 53 51.10	2.1970	2 59 29.9	11.251	16	13 38 5.81	2.1593	5 54 47.2	10.608
17	11 56 2.87	2.1954	2 48 14.5	11.263	17	13 40 15.37	2.1593	6 5 22.6	10.570
18	11 58 14.55	2.1938	2 36 58.4	11.273	18	13 42 24.93	2.1593	6 15 55.6	10.531
19	12 0 26.13	2.1923	2 25 41.7	11.283	19	13 44 34.49	2.1593	6 26 26.3	10.491
20	12 2 37.62	2.1908	2 14 24.5	11.291	20	13 46 44.05	2.1593	6 36 54.5	10.450
21	12 4 49.02	2.1893	2 3 6.8	11.298	21	13 48 53.61	2.1594	6 47 20.2	10.408
22	12 7 0.34	2.1879	1 51 48.7	11.304	22	13 51 3.18	2.1595	6 57 43.4	10.364
23	12 9 11.58	2.1866	1 40 30.2	11.310	23	13 53 12.76	2.1596	7 8 3.9	10.320
24	12 11 22.73	2.1852	N. 1 29 11.5	11.314	24	13 55 22.34	2.1597	S. 7 18 21.8	10.275

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
TUESDAY 5.					THURSDAY 7.				
0	13 55 22.34	2.1597	S. 7° 18' 21.8"	10.276	0	15 39 26.70	2.1787	S. 14° 24' 6.1"	7.178
1	13 57 31.93	2.1599	7 28 37.0	10.280	1	15 41 37.44	2.1791	14 31 14.3	7.007
2	13 59 41.53	2.1601	7 38 49.4	10.183	2	15 43 48.20	2.1795	14 38 17.7	7.015
3	14 1 51.14	2.1603	7 48 59.0	10.186	3	15 45 58.98	2.1798	14 45 16.2	6.923
4	14 4 07.6	2.1605	7 59 5.7	10.087	4	15 48 9.78	2.1802	14 52 9.7	6.851
5	14 6 10.39	2.1607	8 9 9.4	10.038	5	15 50 20.60	2.1806	14 58 58.3	6.768
6	14 8 20.04	2.1609	8 19 10.2	9.998	6	15 52 31.45	2.1810	15 5 41.9	6.684
7	14 10 29.71	2.1612	8 29 7.9	9.937	7	15 54 42.32	2.1813	15 12 20.4	6.600
8	14 12 39.39	2.1615	8 39 2.6	9.886	8	15 56 53.20	2.1816	15 18 53.9	6.516
9	14 14 49.09	2.1618	8 48 54.1	9.832	9	15 59 4.10	2.1819	15 25 22.3	6.430
10	14 16 58.81	2.1621	8 58 42.4	9.778	10	16 1 15.02	2.1822	15 31 45.5	6.345
11	14 19 8.55	2.1624	9 8 27.5	9.734	11	16 3 25.96	2.1824	15 38 3.6	6.269
12	14 21 18.30	2.1627	9 18 9.3	9.688	12	16 5 36.91	2.1826	15 44 16.6	6.173
13	14 23 28.07	2.1631	9 27 47.7	9.612	13	16 7 47.87	2.1828	15 50 24.4	6.086
14	14 25 37.87	2.1634	9 37 22.7	9.565	14	16 9 58.85	2.1830	15 56 26.9	5.999
15	14 27 47.69	2.1638	9 46 54.3	9.497	15	16 12 9.84	2.1832	16 2 24.2	5.912
16	14 29 57.53	2.1642	9 56 22.4	9.438	16	16 14 20.84	2.1834	16 8 16.3	5.824
17	14 32 7.39	2.1646	10 5 46.9	9.379	17	16 16 31.85	2.1836	16 14 3.1	5.735
18	14 34 17.28	2.1650	10 15 7.9	9.319	18	16 18 42.87	2.1837	16 19 44.5	5.646
19	14 36 27.19	2.1654	10 24 25.2	9.268	19	16 20 53.89	2.1838	16 25 20.6	5.557
20	14 38 37.13	2.1658	10 33 38.8	9.198	20	16 23 4.92	2.1839	16 30 51.3	5.468
21	14 40 47.10	2.1663	10 42 48.7	9.133	21	16 25 15.96	2.1840	16 36 16.6	5.378
22	14 42 57.09	2.1667	10 51 54.8	9.070	22	16 27 27.00	2.1841	16 41 36.6	5.288
23	14 45 7.11	2.1672	S. 11° 0' 57.1"	9.006	23	16 29 38.04	2.1841	S. 16° 46' 51.2"	5.198
WEDNESDAY 6.					FRIDAY 8.				
0	14 47 17.15	2.1676	S. 11° 9' 55.5"	8.941	0	16 31 49.09	2.1840	S. 16° 52' 0.3"	5.107
1	14 49 27.22	2.1681	11 18 50.0	8.876	1	16 34 0.13	2.1840	16 57 4.0	5.016
2	14 51 37.32	2.1685	11 27 40.6	8.809	2	16 36 11.17	2.1840	17 2 2.2	4.925
3	14 53 47.45	2.1690	11 36 27.1	8.742	3	16 38 22.21	2.1839	17 6 54.9	4.833
4	14 55 57.60	2.1695	11 45 9.6	8.674	4	16 40 33.24	2.1838	17 11 42.1	4.741
5	14 58 7.78	2.1700	11 53 48.0	8.605	5	16 42 44.27	2.1837	17 16 23.8	4.648
6	15 0 18.00	2.1705	12 2 22.2	8.536	6	16 44 55.29	2.1836	17 20 59.9	4.556
7	15 2 28.25	2.1710	12 10 52.3	8.466	7	16 47 6.30	2.1834	17 25 30.5	4.463
8	15 4 38.52	2.1714	12 19 18.1	8.395	8	16 49 17.30	2.1832	17 29 55.5	4.371
9	15 6 48.82	2.1719	12 27 39.7	8.324	9	16 51 28.29	2.1830	17 34 14.9	4.278
10	15 8 59.15	2.1723	12 35 57.0	8.252	10	16 53 39.27	2.1828	17 38 28.8	4.186
11	15 11 9.51	2.1728	12 44 9.9	8.179	11	16 55 50.23	2.1825	17 42 37.1	4.091
12	15 13 19.89	2.1733	12 52 18.5	8.106	12	16 58 1.17	2.1822	17 46 39.7	3.997
13	15 15 30.30	2.1738	13 0 22.7	8.032	13	17 0 12.10	2.1819	17 50 36.7	3.903
14	15 17 40.75	2.1743	13 8 22.4	7.957	14	17 2 23.00	2.1816	17 54 28.1	3.809
15	15 19 51.22	2.1748	13 16 17.6	7.882	15	17 4 33.88	2.1812	17 58 13.8	3.715
16	15 22 1.72	2.1753	13 24 8.3	7.806	16	17 6 44.74	2.1808	18 1 53.9	3.621
17	15 24 12.25	2.1758	13 31 54.4	7.730	17	17 8 55.57	2.1808	18 5 28.3	3.526
18	15 26 22.81	2.1763	13 39 35.9	7.653	18	17 11 6.38	2.1799	18 8 57.0	3.432
19	15 28 33.39	2.1766	13 47 12.7	7.576	19	17 13 17.16	2.1794	18 12 20.0	3.337
20	15 30 44.00	2.1771	13 54 44.9	7.496	20	17 15 27.91	2.1789	18 15 37.4	3.242
21	15 32 54.64	2.1775	14 2 12.4	7.417	21	17 17 38.63	2.1783	18 18 49.0	3.147
22	15 35 5.30	2.1779	14 9 35.1	7.338	22	17 19 49.31	2.1777	18 21 55.0	3.052
23	15 37 15.99	2.1783	14 16 53.0	7.258	23	17 21 59.96	2.1771	18 24 55.3	2.957
24	15 39 26.70	2.1787	S. 14° 24' 6.1"	7.178	24	17 24 10.57	2.1765	S. 18° 27' 49.9"	2.863

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SATURDAY 9.					MONDAY 11.				
0	17 24 10.57	2.1765	S.18° 27' 49.9"	2.862	0	19 7 23.67	2.1145	S.18° 56' 20.0"	1.631
1	17 26 21.14	2.1766	18 30 38.8	2.767	1	19 9 30.48	2.1156	18 54 40.1	1.709
2	17 28 31.67	2.1762	18 33 21.9	2.673	2	19 11 37.18	2.1166	18 52 54.9	1.787
3	17 30 42.16	2.1745	18 35 59.3	2.576	3	19 13 43.77	2.1089	18 51 4.4	1.865
4	17 32 52.61	2.1738	18 38 31.0	2.481	4	19 15 50.25	2.1071	18 49 8.7	1.973
5	17 35 3.02	2.1730	18 40 57.0	2.385	5	19 17 56.62	2.1042	18 47 7.7	2.080
6	17 37 13.37	2.1722	18 43 17.2	2.290	6	19 20 2.87	2.1033	18 45 1.5	2.147
7	17 39 23.67	2.1719	18 45 31.8	2.195	7	19 22 9.00	2.1018	18 42 50.0	2.234
8	17 41 33.93	2.1705	18 47 40.6	2.099	8	19 24 15.02	2.0993	18 40 33.4	2.320
9	17 43 44.13	2.1696	18 49 43.7	2.004	9	19 26 20.92	2.0978	18 38 11.6	2.405
10	17 45 54.28	2.1687	18 51 41.0	1.909	10	19 28 26.70	2.0964	18 35 44.7	2.492
11	17 48 4.37	2.1678	18 53 32.7	1.814	11	19 30 32.36	2.0954	18 33 12.6	2.577
12	17 50 14.41	2.1668	18 55 18.6	1.718	12	19 32 37.91	2.0944	18 30 35.4	2.662
13	17 52 24.39	2.1658	18 56 58.8	1.623	13	19 34 43.33	2.0934	18 27 53.1	2.747
14	17 54 34.30	2.1647	18 58 33.3	1.527	14	19 36 48.64	2.0925	18 25 5.8	2.831
15	17 56 44.15	2.1636	19 0 2.1	1.432	15	19 38 53.83	2.0915	18 22 13.4	2.915
16	17 58 53.93	2.1625	19 1 25.2	1.337	16	19 40 58.90	2.0905	18 19 16.0	2.999
17	18 1 3.65	2.1614	19 2 42.5	1.242	17	19 43 3.85	2.0894	18 16 13.6	3.083
18	18 3 13.30	2.1603	19 3 54.2	1.147	18	19 45 8.67	2.0794	18 13 6.2	3.166
19	18 5 22.89	2.1591	19 5 0.2	1.052	19	19 47 13.37	2.0778	18 9 53.8	3.247
20	18 7 32.40	2.1579	19 6 0.5	0.957	20	19 49 17.95	2.0763	18 6 36.5	3.329
21	18 9 41.84	2.1567	19 6 55.1	0.863	21	19 51 22.41	2.0738	18 3 14.3	3.411
22	18 11 51.20	2.1555	19 7 44.1	0.768	22	19 53 26.74	2.0713	17 59 47.2	3.493
23	18 14 0.49	2.1543	S.19° 8' 27.4"	0.674	23	19 55 30.95	2.0692	S.17° 56' 15.2"	3.575
SUNDAY 10.					TUESDAY 12.				
0	18 16 9.70	2.1529	S.19° 9' 5.0"	0.580	0	19 57 35.04	2.0671	S.17° 52' 38.4"	3.654
1	18 18 18.83	2.1515	19 9 37.0	0.486	1	19 59 39.01	2.0651	17 48 56.7	3.734
2	18 20 27.88	2.1502	19 10 3.3	0.392	2	20 1 42.85	2.0630	17 45 10.3	3.814
3	18 22 36.85	2.1488	19 10 24.0	0.298	3	20 3 46.57	2.0609	17 41 19.1	3.893
4	18 24 45.73	2.1474	19 10 39.1	0.204	4	20 5 50.16	2.0588	17 37 23.1	3.973
5	18 26 54.53	2.1459	19 10 48.6	0.111	5	20 7 53.63	2.0568	17 33 22.4	4.051
6	18 29 3.24	2.1445	19 10 52.5	0.018	6	20 9 56.98	2.0547	17 29 17.0	4.130
7	18 31 11.86	2.1430	19 10 50.8	0.075	7	20 12 0.21	2.0527	17 25 6.9	4.208
8	18 33 20.40	2.1415	19 10 43.5	0.168	8	20 14 3.31	2.0507	17 20 52.1	4.285
9	18 35 28.85	2.1400	19 10 30.7	0.260	9	20 16 6.29	2.0487	17 16 32.7	4.362
10	18 37 37.20	2.1384	19 10 12.3	0.353	10	20 18 9.15	2.0466	17 12 8.7	4.438
11	18 39 45.46	2.1368	19 9 48.4	0.445	11	20 20 11.89	2.0446	17 7 40.1	4.514
12	18 41 53.62	2.1352	19 9 18.9	0.537	12	20 22 14.50	2.0426	17 3 7.0	4.590
13	18 44 1.68	2.1336	19 8 43.9	0.628	13	20 24 17.00	2.0406	16 58 29.3	4.666
14	18 46 9.65	2.1320	19 8 3.5	0.720	14	20 26 19.37	2.0385	16 53 47.1	4.741
15	18 48 17.51	2.1303	19 7 17.6	0.811	15	20 28 21.62	2.0365	16 49 0.4	4.816
16	18 50 25.28	2.1286	19 6 26.2	0.902	16	20 30 23.75	2.0345	16 44 9.3	4.890
17	18 52 32.95	2.1269	19 5 29.3	0.993	17	20 32 25.76	2.0325	16 39 13.7	4.963
18	18 54 40.51	2.1252	19 4 27.0	1.083	18	20 34 27.65	2.0305	16 34 13.7	5.036
19	18 56 47.97	2.1235	19 3 19.3	1.173	19	20 36 29.42	2.0285	16 29 9.3	5.109
20	18 58 55.33	2.1217	19 2 6.2	1.263	20	20 38 31.08	2.0266	16 24 0.6	5.181
21	19 1 2.58	2.1199	19 0 47.7	1.353	21	20 40 32.62	2.0247	16 18 47.6	5.253
22	19 3 9.72	2.1181	18 59 23.8	1.443	22	20 42 34.04	2.0227	16 13 30.2	5.325
23	19 5 16.75	2.1163	18 57 54.6	1.532	23	20 44 35.35	2.0208	16 8 8.5	5.396
24	19 7 23.67	2.1145	S.18° 56' 20.0"	1.621	24	20 46 36.54	2.0189	S.16° 2' 42.6"	5.467

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
WEDNESDAY 13.					FRIDAY 15.				
0	20 46 36.54	2.0189	S.16° 2' 42.6"	8.467	0	22 21 40.81	1.9624	S.10° 27' 0.6"	8.848
1	20 48 37.62	2.0170	15 57 12.5	8.538	1	22 23 37.93	1.9617	10 18 38.2	8.397
2	20 50 38.58	2.0161	15 51 38.1	8.606	2	22 25 35.02	1.9611	10 10 12.9	8.446
3	20 52 39.43	2.0152	15 45 59.5	8.678	3	22 27 32.07	1.9608	10 1 44.7	8.494
4	20 54 40.16	2.0113	15 40 16.8	8.747	4	22 29 29.08	1.9600	9 53 13.6	8.541
5	20 56 40.79	2.0085	15 34 30.0	8.816	5	22 31 26.06	1.9498	9 44 39.7	8.688
6	20 58 41.30	2.0076	15 28 39.0	8.883	6	22 33 23.02	1.9490	9 36 3.0	8.686
7	21 0 41.70	2.0068	15 22 44.0	8.951	7	22 35 19.95	1.9486	9 27 23.5	8.681
8	21 2 42.00	2.0040	15 16 44.9	9.019	8	22 37 16.85	1.9482	9 18 41.2	8.727
9	21 4 42.19	2.0022	15 10 41.8	9.086	9	22 39 13.73	1.9478	9 9 56.2	8.773
10	21 6 42.27	2.0006	15 4 34.6	9.152	10	22 41 10.59	1.9476	9 1 8.6	8.817
11	21 8 42.25	1.9988	14 58 23.5	9.218	11	22 43 7.43	1.9473	8 52 18.3	8.861
12	21 10 42.13	1.9971	14 52 8.5	9.283	12	22 45 4.36	1.9470	8 43 25.3	8.905
13	21 12 41.91	1.9964	14 45 49.6	9.348	13	22 47 1.08	1.9468	8 34 29.7	8.948
14	21 14 41.58	1.9937	14 39 26.7	9.413	14	22 48 57.88	1.9466	8 25 31.5	8.991
15	21 16 41.15	1.9920	14 33 0.0	9.477	15	22 50 54.67	1.9465	8 16 30.8	9.033
16	21 18 40.62	1.9903	14 26 29.4	9.541	16	22 52 51.46	1.9465	8 7 27.6	9.074
17	21 20 39.99	1.9887	14 19 55.0	9.606	17	22 54 48.25	1.9465	7 58 21.9	9.115
18	21 22 39.27	1.9871	14 13 16.8	9.668	18	22 56 45.04	1.9465	7 49 13.8	9.156
19	21 24 38.45	1.9856	14 6 34.8	9.731	19	22 58 41.83	1.9465	7 40 3.2	9.196
20	21 26 37.54	1.9841	13 59 49.1	9.793	20	23 0 38.62	1.9466	7 30 50.3	9.236
21	21 28 36.54	1.9826	13 52 59.7	9.854	21	23 2 35.42	1.9467	7 21 35.0	9.275
22	21 30 35.45	1.9811	13 46 6.6	9.916	22	23 4 32.23	1.9469	7 12 17.3	9.314
23	21 32 34.27	1.9796	S.13° 39' 9.9"	9.976	23	23 6 29.05	1.9472	S. 7° 2' 57.3"	9.353
THURSDAY 14.					SATURDAY 16.				
0	21 34 33.00	1.9781	S.13° 32' 9.5"	7.087	0	23 8 25.89	1.9476	S. 6° 53' 35.0"	9.390
1	21 36 31.65	1.9767	13 25 5.5	7.097	1	23 10 22.75	1.9478	6 44 10.5	9.427
2	21 38 30.21	1.9753	13 17 57.9	7.166	2	23 12 19.62	1.9481	6 34 43.8	9.462
3	21 40 28.69	1.9740	13 10 46.8	7.215	3	23 14 16.52	1.9486	6 25 15.0	9.498
4	21 42 27.09	1.9726	13 3 32.1	7.273	4	23 16 13.44	1.9489	6 15 44.0	9.534
5	21 44 25.41	1.9713	12 56 13.9	7.331	5	23 18 10.39	1.9494	6 6 10.9	9.569
6	21 46 23.65	1.9700	12 48 52.3	7.389	6	23 20 7.37	1.9600	5 56 35.7	9.604
7	21 48 21.82	1.9686	12 41 27.3	7.446	7	23 22 4.39	1.9606	5 46 58.4	9.638
8	21 50 19.91	1.9676	12 33 58.8	7.503	8	23 24 1.44	1.9612	5 37 19.1	9.671
9	21 52 17.93	1.9664	12 26 26.9	7.560	9	23 25 58.53	1.9619	5 27 37.8	9.704
10	21 54 15.88	1.9652	12 18 51.7	7.616	10	23 27 55.67	1.9626	5 17 54.6	9.736
11	21 56 13.76	1.9641	12 11 13.2	7.670	11	23 29 52.85	1.9634	5 8 9.5	9.768
12	21 58 11.57	1.9630	12 3 31.3	7.726	12	23 31 50.07	1.9642	4 58 22.5	9.799
13	22 0 9.32	1.9619	11 55 46.1	7.780	13	23 33 47.34	1.9650	4 48 33.6	9.830
14	22 2 7.00	1.9609	11 47 57.7	7.834	14	23 35 44.67	1.9659	4 38 42.9	9.860
15	22 4 4.62	1.9600	11 40 6.0	7.888	15	23 37 42.05	1.9668	4 28 50.4	9.889
16	22 6 2.19	1.9600	11 32 11.2	7.941	16	23 39 39.49	1.9678	4 18 56.2	9.916
17	22 7 59.70	1.9590	11 24 13.2	7.993	17	23 41 36.99	1.9689	4 9 0.3	9.946
18	22 9 57.15	1.9571	11 16 12.0	8.046	18	23 43 34.56	1.9690	3 59 2.7	9.974
19	22 11 54.55	1.9562	11 8 7.7	8.097	19	23 45 32.19	1.9611	3 49 3.5	10.001
20	22 13 51.89	1.9554	11 0 0.4	8.148	20	23 47 29.89	1.9622	3 39 2.6	10.027
21	22 15 49.19	1.9546	10 51 50.0	8.199	21	23 49 27.66	1.9636	3 29 0.2	10.053
22	22 17 46.44	1.9538	10 43 36.5	8.249	22	23 51 25.51	1.9648	3 18 56.2	10.078
23	22 19 43.65	1.9531	10 35 20.0	8.299	23	23 53 23.44	1.9661	3 8 50.8	10.103
24	22 21 40.81	1.9524	S.10° 27' 0.6"	8.348	24	23 55 21.45	1.9676	S. 2° 58' 43.9"	10.127

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SUNDAY 17.					TUESDAY 19.				
0	^h 23 ^m 55 ^s 21.45	1.9676	S. 9° 58' 43.9"	10.197	0	^h 1 32 18.45	2.0006	N. 5° 21' 51.7"	10.433
1	23 57 19.54	1.9680	2 48 35.6	10.180	1	1 34 24.00	2.0043	5 32 17.2	10.418
2	23 59 17.72	1.9704	2 38 25.9	10.173	2	1 36 29.77	2.0081	5 42 41.9	10.403
3	0 1 15.99	1.9719	2 28 14.9	10.166	3	1 38 35.77	2.1019	5 53 5.6	10.387
4	0 3 14.35	1.9735	2 18 2.5	10.216	4	1 40 41.99	2.1006	6 3 28.3	10.370
5	0 5 12.81	1.9751	2 7 48.9	10.307	5	1 42 48.45	2.1007	6 13 50.0	10.352
6	0 7 11.36	1.9766	1 57 34.0	10.307	6	1 44 55.15	2.1126	6 24 10.5	10.333
7	0 9 10.02	1.9785	1 47 18.0	10.377	7	1 47 2.08	2.1175	6 34 29.8	10.312
8	0 11 8.78	1.9803	1 37 0.8	10.386	8	1 49 9.25	2.1315	6 44 47.9	10.290
9	0 13 7.65	1.9821	1 26 42.5	10.314	9	1 51 16.66	2.1305	6 55 4.7	10.268
10	0 15 6.63	1.9838	1 16 23.1	10.382	10	1 53 24.31	2.1306	7 5 20.1	10.246
11	0 17 5.72	1.9856	1 6 2.6	10.349	11	1 55 32.21	2.1337	7 15 34.1	10.221
12	0 19 4.93	1.9879	0 55 41.2	10.365	12	1 57 40.36	2.1379	7 25 46.6	10.196
13	0 21 4.25	1.9898	0 45 18.9	10.380	13	1 59 48.76	2.1421	7 35 57.6	10.169
14	0 23 3.70	1.9919	0 34 55.6	10.386	14	2 1 57.41	2.1464	7 46 6.9	10.141
15	0 25 3.98	1.9940	0 24 31.5	10.409	15	2 4 6.32	2.1507	7 56 14.6	10.113
16	0 27 2.98	1.9961	0 14 6.5	10.423	16	2 6 15.49	2.1550	8 6 20.5	10.083
17	0 29 2.81	1.9983	S. 0 3 40.7	10.436	17	2 8 24.91	2.1598	8 16 24.6	10.052
18	0 31 2.78	2.0006	N. 0 6 45.8	10.448	18	2 10 34.60	2.1657	8 26 26.8	10.020
19	0 33 2.89	2.0029	0 17 13.0	10.459	19	2 12 44.55	2.1681	8 36 27.1	9.987
20	0 35 3.13	2.0053	0 27 40.8	10.469	20	2 14 54.77	2.1726	8 46 25.3	9.953
21	0 37 3.52	2.0077	0 38 9.3	10.478	21	2 17 5.26	2.1770	8 56 21.5	9.918
22	0 39 4.05	2.0101	0 48 38.3	10.488	22	2 19 16.01	2.1815	9 6 15.5	9.882
23	0 41 4.73	2.0126	N. 0 59 7.8	10.496	23	2 21 27.03	2.1860	N. 9 16 7.3	9.845
MONDAY 18.					WEDNESDAY 20.				
0	0 43 5.56	2.0152	N. 1 9 37.8	10.503	0	2 23 38.33	2.1906	N. 9 25 56.9	9.807
1	0 45 6.55	2.0178	1 20 8.2	10.510	1	2 25 49.90	2.1951	9 35 44.1	9.767
2	0 47 7.69	2.0204	1 30 39.0	10.516	2	2 28 1.75	2.1997	9 45 28.9	9.726
3	0 49 8.99	2.0231	1 41 10.1	10.521	3	2 30 13.87	2.2043	9 55 11.2	9.684
4	0 51 10.46	2.0258	1 51 41.5	10.526	4	2 32 26.27	2.2089	10 4 51.0	9.641
5	0 53 12.10	2.0286	2 2 13.2	10.529	5	2 34 38.95	2.2137	10 14 28.1	9.596
6	0 55 13.90	2.0314	2 12 45.0	10.531	6	2 36 51.92	2.2185	10 24 2.5	9.550
7	0 57 15.87	2.0343	2 23 17.0	10.533	7	2 39 5.17	2.2233	10 33 34.1	9.503
8	0 59 18.02	2.0372	2 33 49.0	10.534	8	2 41 18.71	2.2280	10 43 2.9	9.455
9	1 1 20.35	2.0402	2 44 21.1	10.535	9	2 43 32.53	2.2328	10 52 28.8	9.407
10	1 3 22.85	2.0432	2 54 53.2	10.536	10	2 45 46.64	2.2376	11 1 51.7	9.357
11	1 5 25.54	2.0463	3 5 25.2	10.537	11	2 48 1.04	2.2424	11 11 11.6	9.306
12	1 7 28.41	2.0494	3 15 57.1	10.539	12	2 50 15.73	2.2472	11 20 28.3	9.254
13	1 9 31.47	2.0526	3 26 28.8	10.541	13	2 52 30.71	2.2521	11 29 41.8	9.199
14	1 11 34.73	2.0558	3 37 0.3	10.543	14	2 54 45.98	2.2569	11 38 52.1	9.143
15	1 13 38.18	2.0591	3 47 31.6	10.545	15	2 57 1.54	2.2618	11 47 59.0	9.087
16	1 15 41.83	2.0624	3 58 2.5	10.547	16	2 59 17.40	2.2667	11 57 2.5	9.029
17	1 17 45.68	2.0656	4 8 33.1	10.548	17	3 1 33.55	2.2716	12 6 2.5	8.970
18	1 19 49.73	2.0692	4 19 3.2	10.549	18	3 3 49.99	2.2765	12 14 58.9	8.910
19	1 21 53.99	2.0727	4 29 32.8	10.549	19	3 6 6.73	2.2814	12 23 51.7	8.849
20	1 23 58.45	2.0762	4 40 1.9	10.549	20	3 8 23.76	2.2863	12 32 40.8	8.787
21	1 26 3.13	2.0798	4 50 30.4	10.549	21	3 10 41.09	2.2913	12 41 26.1	8.723
22	1 28 8.02	2.0833	5 0 58.2	10.548	22	3 12 58.72	2.2962	12 50 7.5	8.658
23	1 30 13.13	2.0869	5 11 25.3	10.546	23	3 15 16.64	2.3012	12 58 45.0	8.592
24	1 32 18.45	2.0906	N. 5 21 51.7	10.543	24	3 17 34.86	2.3062	N. 13 7 18.5	8.524

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
THURSDAY 21.					SATURDAY 23.				
0	3 17 34.86	2.3892	N.13° 7' 18.5	8.824	0	5 13 36.99	2.6187	N.18° 15' 49.1	3.903
1	3 19 53.38	2.3111	13 15 47.9	8.455	1	5 16 7.90	2.6187	18 19 39.6	2.781
2	3 22 12.19	2.3160	13 24 13.1	8.865	2	5 18 38.99	2.6196	18 23 22.8	2.559
3	3 24 31.30	2.3209	13 32 34.1	8.313	3	5 21 10.25	2.6224	18 26 58.7	2.536
4	3 26 50.70	2.3268	13 40 50.7	8.941	4	5 23 41.68	2.6262	18 30 27.1	2.412
5	3 29 10.40	2.3306	13 49 3.0	8.106	5	5 26 13.28	2.6279	18 33 48.1	2.388
6	3 31 30.40	2.3357	13 57 10.9	8.093	6	5 28 45.03	2.6305	18 37 1.7	2.163
7	3 33 50.69	2.3406	14 5 14.2	8.017	7	5 31 16.94	2.6380	18 40 7.8	2.038
8	3 36 11.27	2.3455	14 13 12.9	7.940	8	5 33 48.99	2.6384	18 43 6.3	2.912
9	3 38 32.15	2.3504	14 21 6.9	7.861	9	5 36 21.19	2.6378	18 45 57.2	2.785
10	3 40 53.32	2.3553	14 28 56.2	7.781	10	5 38 53.53	2.6400	18 48 40.5	2.658
11	3 43 14.78	2.3602	14 36 40.6	7.699	11	5 41 26.00	2.6422	18 51 16.2	2.531
12	3 45 36.54	2.3650	14 44 20.1	7.617	12	5 43 58.60	2.6443	18 53 44.2	2.402
13	3 47 58.59	2.3698	14 51 54.6	7.533	13	5 46 31.32	2.6443	18 56 4.5	2.378
14	3 50 20.92	2.3746	14 59 24.1	7.449	14	5 49 4.16	2.6462	18 58 17.0	2.148
15	3 52 43.54	2.3794	15 6 48.5	7.363	15	5 51 37.11	2.6500	19 0 21.7	2.013
16	3 55 6.44	2.3842	15 14 7.7	7.276	16	5 54 10.16	2.6517	19 2 18.6	1.988
17	3 57 29.63	2.3890	15 21 21.6	7.188	17	5 56 43.31	2.6533	19 4 7.7	1.753
18	3 59 53.11	2.3936	15 28 30.2	7.098	18	5 59 16.56	2.6548	19 5 48.9	1.622
19	4 2 16.87	2.3983	15 35 33.3	7.007	19	6 1 49.89	2.6562	19 7 22.2	1.490
20	4 4 40.90	2.4029	15 42 31.0	6.916	20	6 4 23.31	2.6576	19 8 47.7	1.356
21	4 7 5.21	2.4075	15 49 23.1	6.822	21	6 6 56.80	2.6597	19 10 5.2	1.226
22	4 9 29.80	2.4121	15 56 9.6	6.736	22	6 9 30.36	2.6606	19 11 14.8	1.094
23	4 11 54.66	2.4166	N.16 2 50.4	6.653	23	6 12 3.99	2.6609	N.19 12 16.5	0.962
FRIDAY 22.					SUNDAY 24.				
0	4 14 19.80	2.4211	N.16 9 25.5	6.566	0	6 14 37.67	2.6618	N.19 13 10.2	0.829
1	4 16 45.21	2.4256	16 15 54.7	6.486	1	6 17 11.41	2.6626	19 13 55.9	0.696
2	4 19 10.88	2.4300	16 22 18.0	6.399	2	6 19 45.19	2.6633	19 14 33.7	0.562
3	4 21 36.81	2.4344	16 28 35.4	6.320	3	6 22 19.01	2.6640	19 15 3.4	0.428
4	4 24 3.01	2.4386	16 34 46.7	6.136	4	6 24 52.87	2.6646	19 15 25.1	0.294
5	4 26 29.47	2.4431	16 40 51.9	6.036	5	6 27 26.75	2.6649	19 15 38.8	0.161
6	4 28 56.18	2.4473	16 46 51.0	5.933	6	6 30 0.66	2.6652	19 15 44.4	0.028
7	4 31 23.15	2.4516	16 52 43.8	5.828	7	6 32 34.58	2.6656	19 15 42.1	0.106
8	4 33 50.36	2.4557	16 58 30.3	5.723	8	6 35 8.52	2.6656	19 15 31.7	0.340
9	4 36 17.82	2.4599	17 4 10.5	5.616	9	6 37 42.46	2.6656	19 15 13.3	0.374
10	4 38 45.53	2.4638	17 9 44.2	5.508	10	6 40 16.39	2.6656	19 14 46.8	0.308
11	4 41 13.48	2.4678	17 15 11.4	5.399	11	6 42 50.32	2.6654	19 14 12.4	0.641
12	4 43 41.66	2.4717	17 20 32.1	5.290	12	6 45 24.24	2.6651	19 13 29.9	0.775
13	4 46 10.08	2.4756	17 25 46.2	5.179	13	6 47 58.14	2.6647	19 12 39.4	0.908
14	4 48 38.73	2.4794	17 30 53.6	5.068	14	6 50 32.01	2.6642	19 11 40.9	1.042
15	4 51 7.60	2.4831	17 35 54.3	4.956	15	6 53 5.85	2.6637	19 10 34.4	1.175
16	4 53 36.70	2.4868	17 40 48.3	4.843	16	6 55 39.65	2.6630	19 9 19.9	1.308
17	4 56 6.02	2.4904	17 45 35.4	4.728	17	6 58 13.41	2.6623	19 7 57.4	1.441
18	4 58 35.55	2.4939	17 50 15.6	4.613	18	7 0 47.12	2.6614	19 6 27.0	1.573
19	5 1 5.29	2.4974	17 54 48.9	4.496	19	7 3 20.78	2.6604	19 4 48.7	1.706
20	5 3 35.23	2.5008	17 59 15.1	4.379	20	7 5 54.37	2.6593	19 3 2.4	1.837
21	5 6 5.38	2.5041	18 3 34.3	4.261	21	7 8 27.90	2.6582	19 1 8.2	1.969
22	5 8 35.72	2.5074	18 7 46.4	4.143	22	7 11 1.36	2.6570	18 59 6.1	2.101
23	5 11 6.26	2.5106	18 11 51.3	4.023	23	7 13 34.74	2.6557	18 56 56.1	2.232
24	5 13 36.99	2.5137	N.18 15 49.1	3.906	24	7 16 8.05	2.6543	N.18 54 38.3	2.363

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
MONDAY 25.					WEDNESDAY 27.				
0	7 16 8.05	2.5643	N.18 54 38.3	2.563	0	9 15 43.32	2.4078	N.14 43 19.7	7.775
1	7 18 41.27	2.5628	18 52 12.6	2.493	1	9 18 7.67	2.4088	14 35 30.5	7.864
2	7 21 14.39	2.5613	18 49 39.2	2.623	2	9 20 31.78	2.3998	14 27 36.0	7.952
3	7 23 47.41	2.5496	18 46 58.0	2.751	3	9 22 55.65	2.3908	14 19 36.3	8.038
4	7 26 20.33	2.5477	18 44 9.1	2.880	4	9 25 19.28	2.3818	14 11 31.4	8.123
5	7 28 53.14	2.5469	18 41 12.4	3.008	5	9 27 42.66	2.3877	14 3 21.4	8.206
6	7 31 25.84	2.5440	18 38 8.1	3.136	6	9 30 5.80	2.3887	13 55 6.4	8.291
7	7 33 58.42	2.5430	18 34 56.2	3.263	7	9 32 28.70	2.3796	13 46 46.5	8.373
8	7 36 30.88	2.5399	18 31 36.6	3.390	8	9 34 51.35	2.3766	13 38 21.7	8.454
9	7 39 3.21	2.5378	18 28 9.4	3.516	9	9 37 13.76	2.3716	13 29 52.1	8.533
10	7 41 35.41	2.5366	18 24 34.7	3.641	10	9 39 35.93	2.3676	13 21 17.7	8.611
11	7 44 7.47	2.5333	18 20 52.5	3.766	11	9 41 57.85	2.3634	13 12 38.7	8.688
12	7 46 39.39	2.5308	18 17 2.8	3.890	12	9 44 19.53	2.3604	13 3 55.1	8.764
13	7 49 11.16	2.5293	18 13 5.7	4.013	13	9 46 40.97	2.3563	12 55 7.0	8.839
14	7 51 42.78	2.5287	18 9 1.2	4.136	14	9 49 2.16	2.3519	12 46 14.4	8.913
15	7 54 14.25	2.5281	18 4 49.4	4.257	15	9 51 23.12	2.3473	12 37 17.4	8.986
16	7 56 45.56	2.5204	18 0 30.3	4.378	16	9 53 43.83	2.3432	12 28 16.1	9.067
17	7 59 16.71	2.5177	17 56 4.0	4.499	17	9 56 4.30	2.3392	12 19 10.6	9.137
18	8 1 47.68	2.5148	17 51 30.4	4.619	18	9 58 24.53	2.3362	12 10 0.9	9.196
19	8 4 18.48	2.5119	17 46 49.6	4.738	19	10 0 44.52	2.3312	12 0 47.1	9.264
20	8 6 49.11	2.5090	17 42 1.8	4.856	20	10 3 4.27	2.3272	11 51 29.2	9.331
21	8 9 19.56	2.5060	17 37 6.9	4.973	21	10 5 23.78	2.3233	11 42 7.4	9.396
22	8 11 49.83	2.5030	17 32 5.0	5.090	22	10 7 43.06	2.3193	11 32 41.7	9.460
23	8 14 19.91	2.4998	N.17 26 56.1	5.206	23	10 10 2.10	2.3144	N.11 23 12.2	9.523
TUESDAY 26.					THURSDAY 28.				
0	8 16 49.80	2.4966	N.17 21 40.3	5.320	0	10 12 20.91	2.3116	N.11 13 38.9	9.584
1	8 19 19.50	2.4933	17 16 17.6	5.434	1	10 14 39.48	2.3076	11 4 2.0	9.646
2	8 21 49.00	2.4900	17 10 48.2	5.547	2	10 16 57.82	2.3037	10 54 21.5	9.704
3	8 24 18.31	2.4867	17 5 12.0	5.658	3	10 19 15.93	2.2999	10 44 37.4	9.763
4	8 26 47.41	2.4833	16 59 29.2	5.769	4	10 21 33.81	2.2961	10 34 49.9	9.820
5	8 29 16.31	2.4799	16 53 39.7	5.880	5	10 23 51.46	2.2923	10 24 59.0	9.876
6	8 31 45.00	2.4764	16 47 43.6	5.989	6	10 26 8.89	2.2886	10 15 4.8	9.930
7	8 34 13.48	2.4728	16 41 41.0	6.097	7	10 28 26.10	2.2849	10 5 7.3	9.984
8	8 36 41.74	2.4692	16 35 32.0	6.204	8	10 30 43.08	2.2813	9 55 6.7	10.036
9	8 39 9.79	2.4656	16 29 16.6	6.310	9	10 32 59.84	2.2776	9 45 2.9	10.088
10	8 41 37.62	2.4620	16 22 54.8	6.415	10	10 35 16.38	2.2738	9 34 56.1	10.138
11	8 44 5.23	2.4583	16 16 26.8	6.519	11	10 37 32.70	2.2702	9 24 46.3	10.187
12	8 46 32.62	2.4546	16 9 52.5	6.623	12	10 39 48.80	2.2667	9 14 33.7	10.234
13	8 48 59.79	2.4509	16 3 12.0	6.724	13	10 42 4.69	2.2631	9 4 18.2	10.281
14	8 51 26.73	2.4471	15 56 25.5	6.826	14	10 44 20.37	2.2596	8 54 0.0	10.326
15	8 53 53.44	2.4433	15 49 33.0	6.925	15	10 46 35.84	2.2560	8 43 39.1	10.371
16	8 56 19.92	2.4394	15 42 34.5	7.024	16	10 48 51.11	2.2527	8 33 15.5	10.414
17	8 58 46.17	2.4356	15 35 30.1	7.122	17	10 51 6.17	2.2493	8 22 49.4	10.456
18	9 1 12.18	2.4316	15 28 19.9	7.218	18	10 53 21.02	2.2459	8 12 20.8	10.497
19	9 3 37.96	2.4277	15 21 3.9	7.314	19	10 55 35.67	2.2426	8 1 49.8	10.537
20	9 6 3.51	2.4238	15 13 42.2	7.409	20	10 57 50.12	2.2392	7 51 16.4	10.576
21	9 8 28.82	2.4198	15 6 14.8	7.503	21	11 0 4.37	2.2359	7 40 40.8	10.613
22	9 10 53.89	2.4166	14 58 41.9	7.594	22	11 2 18.43	2.2327	7 30 3.0	10.648
23	9 13 18.72	2.4118	14 51 3.5	7.686	23	11 4 32.30	2.2296	7 19 23.0	10.683
24	9 15 43.32	2.4078	N.14 43 19.7	7.776	24	11 6 45.98	2.2264	N. 7 8 41.0	10.718

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Dist.	IIIh.	P. L. of Dist.	VIh.	P. L. of Dist.	IXh.	P. L. of Dist.
1	SUN W.	112° 46' 51"	2646	114° 24' 43"	2650	116° 2' 30"	2654	117° 40' 12"	2657
	Aldebaran W.	86 13 40	2617	87 59 14	2620	89 44 44	2624	91 30 9	2627
	Venus W.	67 30 37	2609	69 7 31	2602	70 44 22	2604	72 21 10	2606
	Pollux W.	43 8 21	2458	44 50 33	2462	46 32 54	2448	48 15 21	2444
	Spica E.	47 54 31	2661	46 10 0	2666	44 25 37	2672	42 41 22	2679
	Saturn E.	89 49 48	2608	88 3 53	2606	86 18 2	2609	84 32 16	2612
	Antares E.	93 47 15	2679	92 3 10	2682	90 19 9	2686	88 35 13	2686
2	SUN W.	125 47 13	2682	127 24 17	2686	129 1 13	2684	130 38 1	2701
	Venus W.	80 24 16	2712	82 0 40	2716	83 36 58	2720	85 13 11	2726
	Pollux W.	56 48 23	2440	58 31 1	2441	60 13 38	2441	61 56 14	2443
	Regulus W.	20 8 39	2650	21 53 26	2653	23 38 8	2667	25 22 44	2662
	Spica E.	34 2 52	2424	32 19 51	2436	30 37 7	2449	28 54 42	2466
	Saturn E.	75 44 40	2631	73 59 26	2635	72 14 18	2640	70 29 17	2645
	Antares E.	79 56 50	2410	78 13 29	2415	76 30 15	2420	74 47 9	2426
3	Venus W.	93 12 40	2751	94 48 12	2757	96 23 36	2764	97 58 51	2771
	Pollux W.	70 28 21	2460	72 10 31	2464	73 52 35	2468	75 34 33	2474
	Regulus W.	34 4 4	2687	35 47 58	2693	37 31 43	2698	39 15 20	2406
	Saturn E.	61 46 2	2671	60 1 46	2676	58 17 39	2684	56 33 42	2691
	Antares E.	66 13 48	2460	64 31 38	2467	62 49 39	2476	61 7 52	2486
4	Pollux W.	84 2 21	2606	85 43 27	2612	87 24 23	2620	89 5 9	2627
	Regulus W.	47 51 5	2430	49 33 44	2447	51 16 12	2465	52 58 29	2462
	Saturn E.	47 56 24	2427	46 13 28	2436	44 30 44	2443	42 48 11	2453
	Antares E.	52 42 19	2638	51 1 58	2650	49 21 54	2664	47 42 9	2677
	α Aquilæ E.	100 32 4	2637	99 0 32	2640	97 29 4	2644	95 57 41	2649
5	Pollux W.	97 26 4	2672	99 5 37	2682	100 44 57	2692	102 24 3	2693
	Regulus W.	61 27 1	2606	63 8 7	2615	64 48 59	2625	66 29 38	2634
	Saturn E.	34 18 43	2603	32 37 32	2612	30 56 36	2624	29 15 56	2636
	Antares E.	39 28 39	2664	37 51 11	2667	36 14 13	2710	34 37 46	2726
	α Aquilæ E.	88 22 46	2688	86 52 20	2691	85 22 8	2612	83 52 10	2626
6	Regulus W.	74 49 27	2669	76 28 42	2696	78 7 42	2697	79 46 26	2618
	Spica W.	21 51 50	2745	23 27 30	2735	25 3 23	2730	26 39 23	2728
	α Aquilæ E.	76 26 44	3104	74 58 39	3123	73 30 57	3143	72 3 40	3166
	Fomalhaut E.	109 35 59	2622	108 4 8	2626	106 32 22	2632	105 0 44	2636
7	Regulus W.	87 56 30	2676	89 33 44	2686	91 10 43	2696	92 47 26	2710
	Spica W.	34 39 16	2744	36 14 58	2750	37 50 32	2757	39 25 56	2766
	α Aquilæ E.	64 54 3	3280	63 29 39	3319	62 5 49	3360	60 42 35	3383
	Fomalhaut E.	97 24 42	2677	95 54 0	2687	94 23 31	2696	92 53 16	2699
8	Spica W.	47 20 13	2610	48 54 28	2620	50 28 30	2629	52 2 20	2639
	α Aquilæ E.	53 56 28	2679	52 37 31	2698	51 19 25	2676	50 2 12	2729
	Fomalhaut E.	85 25 32	3069	83 56 44	3082	82 28 13	3097	81 0 0	3111
	α Pegasi E.	100 18 40	3078	98 50 3	3087	97 21 37	3096	95 53 22	3108
	Jupiter E.	115 3 40	2641	113 30 5	2662	111 56 45	2664	110 23 40	2676
9	Spica W.	59 48 13	2691	61 20 44	2690	62 53 3	2610	64 25 9	2626
	Saturn W.	18 12 18	2688	19 44 52	2691	21 17 22	2696	22 49 46	2691
	Fomalhaut E.	73 43 19	3186	72 16 55	3204	70 50 51	3221	69 25 7	3226
	α Pegasi E.	88 35 17	3160	87 8 20	3173	85 41 38	3184	84 15 10	3197
	Jupiter E.	102 41 59	2633	101 10 22	2644	99 38 59	2665	98 7 50	2666

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Dist.	XVh.	P. L. of Dist.	XVIIIh.	P. L. of Dist.	XXIh.	P. L. of Dist.
1	SUN W.	119 17 49	2602	120 55 26	2607	122 32 44	2672	124 10 2	2677
	Aldebaran W.	93 15 29	2631	95 0 44	2634	96 45 54	2636	98 30 58	2642
	Venus W.	73 57 55	2609	75 34 37	2702	77 11 14	2706	78 47 47	2708
	Pollux W.	49 57 53	2442	51 40 28	2441	53 23 5	2439	55 5 44	2439
	Spica E.	40 57 17	2606	39 13 22	2604	37 29 39	2403	35 46 9	2412
	Saturn E.	82 46 34	2616	81 0 57	2620	79 15 26	2623	77 30 0	2627
	Antares E.	86 51 21	2601	85 7 34	2605	83 23 53	2400	81 40 18	2406
2	SUN W.	132 14 40	2707	133 51 10	2714	135 27 31	2722	137 3 42	2729
	Venus W.	86 49 18	2729	88 25 19	2735	90 1 13	2740	91 37 0	2746
	Pollux W.	63 38 48	2446	65 21 18	2448	67 3 44	2459	68 46 5	2466
	Regulus W.	27 7 14	2606	28 51 37	2671	30 35 53	2670	32 20 2	2681
	Spica E.	27 12 39	2469	25 31 1	2604	23 49 53	2630	22 9 21	2661
	Saturn E.	68 44 23	2600	66 59 37	2665	65 14 58	2660	63 30 26	2666
	Antares E.	73 4 10	2421	71 21 20	2436	69 38 40	2445	67 56 9	2462
3	Venus W.	99 33 57	2778	101 8 54	2786	102 43 42	2792	104 18 20	2801
	Pollux W.	77 16 23	2480	78 58 5	2485	80 39 39	2491	82 21 5	2496
	Regulus W.	40 58 48	2412	42 42 6	2416	44 25 15	2424	46 8 15	2431
	Saturn E.	54 49 55	2606	53 6 17	2400	51 22 49	2412	49 39 31	2419
	Antares E.	59 26 18	2404	57 44 57	2604	56 3 49	2616	54 22 56	2626
4	Pollux W.	90 45 44	2636	92 26 7	2645	94 6 18	2653	95 46 17	2662
	Regulus W.	54 40 35	2471	56 22 29	2480	58 4 11	2487	59 45 42	2496
	Saturn E.	41 5 51	2462	39 23 44	2471	37 41 50	2460	36 0 9	2461
	Antares E.	46 2 43	2606	44 23 38	2600	42 44 55	2626	41 6 35	2643
	α Aquilæ E.	94 26 24	2665	92 55 15	2662	91 24 15	2670	89 53 25	2679
5	Pollux W.	104 2 54	2614	105 41 30	2626	107 19 51	2637	108 57 56	2649
	Regulus W.	68 10 4	2644	69 50 16	2654	71 30 14	2664	73 9 58	2676
	Saturn E.	27 35 33	2649	25 55 28	2668	24 15 42	2677	22 36 15	2691
	Antares E.	33 1 54	2706	31 26 40	2707	29 52 8	2683	28 18 23	2674
	α Aquilæ E.	82 22 28	2609	80 53 3	2604	79 28 57	2609	77 55 10	2607
6	Regulus W.	81 24 59	2629	83 3 15	2640	84 41 15	2652	86 19 0	2666
	Spica W.	28 15 26	2726	29 51 29	2729	31 27 30	2733	33 3 26	2738
	α Aquilæ E.	70 36 49	2197	69 10 24	2310	67 44 27	2236	66 19 0	2261
	Fomalhaut E.	103 29 14	2640	101 57 52	2662	100 26 39	2669	98 55 35	2696
7	Regulus W.	94 23 53	2721	96 0 5	2736	97 36 1	2745	99 11 41	2756
	Spica W.	41 1 10	2773	42 36 13	2782	44 11 5	2791	45 45 45	2800
	α Aquilæ E.	59 19 59	2417	57 58 2	2454	56 36 46	2498	55 16 14	2536
	Fomalhaut E.	91 23 15	2621	89 53 28	2669	88 23 55	2613	86 54 36	2666
8	Spica W.	53 35 57	2649	55 9 21	2660	56 42 32	2670	58 15 29	2680
	α Aquilæ E.	48 45 56	2706	47 30 41	2660	46 16 30	2616	45 3 26	2667
	Fomalhaut E.	79 32 4	2126	78 4 25	2140	76 37 4	2156	75 10 2	2173
	α Pegasi E.	94 25 19	2116	92 57 29	2127	91 29 52	2138	90 2 28	2143
	Jupiter E.	106 50 50	2607	107 18 15	2600	105 45 55	2611	104 13 50	2622
9	Spica W.	65 57 2	2606	67 28 43	2629	69 0 12	2649	70 31 29	2666
	Saturn W.	24 22 3	2606	25 54 12	2616	27 26 12	2623	28 58 3	2630
	Fomalhaut E.	67 59 44	2657	66 34 42	2716	65 10 1	2691	63 45 43	2614
	α Pegasi E.	82 48 57	2399	81 22 59	2322	79 57 16	2326	78 31 48	2346
	Jupiter E.	96 36 54	2677	95 6 12	2667	93 35 43	2697	92 5 26	2606

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
10	Spica W.	72° 2' 34"	2967	73° 33' 28"	2976	75° 4' 11"	2985	76° 34' 43"	2993
	Saturn W.	30 29 44	2937	32 1 16	2945	33 32 38	2953	35 3 51	2959
	Antares W.	27 19 48	2221	28 45 20	2214	30 11 13	2199	31 37 23	2188
	Fomalhaut E.	62 21 48	2334	60 58 16	2365	59 35 8	2377	58 12 25	2400
	α Pegasi E.	77 6 36	2992	75 41 40	2978	74 17 0	2989	72 52 36	2993
	Jupiter E.	90 35 21	3016	89 5 28	3026	87 35 47	3034	86 6 17	3043
	Mars E.	108 1 17	2226	106 35 39	2226	105 10 13	2246	103 44 58	2255
	SUN E.	136 4 6	2333	134 40 33	2343	133 17 10	2351	131 53 57	2359
11	Spica W.	84 4 51	3031	85 34 25	3036	87 3 51	3044	88 33 9	3050
	Saturn W.	42 37 42	2993	44 8 3	3000	45 38 16	3005	47 8 22	3010
	Antares W.	38 50 42	2161	40 17 38	2158	41 44 37	2155	43 11 39	2155
	Fomalhaut E.	51 25 37	2629	50 5 45	2659	48 46 26	2691	47 27 42	2694
	α Pegasi E.	65 54 48	2879	64 32 7	2895	63 9 45	2911	61 47 41	2929
	Jupiter E.	78 41 23	3092	77 12 52	3090	75 44 30	3096	74 16 16	3102
	Mars E.	96 41 19	2296	95 17 3	2304	93 52 56	2311	92 28 57	2318
	SUN E.	125 0 7	2396	123 37 46	2402	122 15 32	2409	120 53 26	2415
12	Spica W.	95 57 58	3074	97 26 39	3078	98 55 15	3082	100 23 47	3085
	Saturn W.	54 37 21	3093	56 6 54	3095	57 36 22	3098	59 5 46	3042
	Antares W.	50 27 4	2162	51 54 11	2152	53 21 18	2151	54 48 26	2151
	Fomalhaut E.	41 4 1	2638	39 49 38	2692	38 36 10	2692	37 23 43	2692
	α Pegasi E.	55 2 29	2925	53 42 33	2947	52 23 1	2970	51 3 54	2996
	Jupiter E.	66 56 46	3127	65 29 9	3120	64 1 36	3133	62 34 7	3136
	Mars E.	85 30 42	2343	84 7 20	2346	82 44 2	2350	81 20 48	2353
	SUN E.	114 4 27	2439	112 42 55	2443	111 21 27	2446	110 0 2	2448
13	Saturn W.	66 32 14	3047	68 1 28	3047	69 30 43	3046	70 59 59	3045
	Antares W.	62 4 20	2148	63 31 37	2142	64 58 56	2140	66 26 17	2138
	α Pegasi E.	44 35 42	2748	43 19 46	2787	42 4 30	2828	40 49 57	2874
	Jupiter E.	55 17 21	3148	53 50 4	3143	52 22 47	3143	50 55 29	3143
	Mars E.	74 25 20	2360	73 2 18	2360	71 39 16	2361	70 16 15	2360
	SUN E.	103 13 29	2454	101 52 14	2454	100 30 59	2454	99 9 43	2452
14	Saturn W.	78 26 50	3082	79 56 23	3098	81 26 1	3094	82 55 44	3019
	Antares W.	73 43 59	2119	75 11 46	2114	76 39 39	2109	78 7 38	2104
	α Aquilæ W.	35 8 6	4098	36 5 3	4066	37 3 53	4098	38 4 29	4012
	Jupiter E.	43 38 32	3190	42 10 59	3126	40 43 21	3192	39 15 38	3118
	Mars E.	63 20 40	2347	61 57 23	2344	60 34 2	2339	59 10 36	2334
	SUN E.	92 22 49	2436	91 1 16	2434	89 39 38	2430	88 17 55	2424
15	Saturn W.	90 26 1	2989	91 56 28	2981	93 27 5	2972	94 57 53	2963
	Antares W.	85 29 22	2069	86 58 9	2062	88 27 5	2054	89 56 11	2046
	α Aquilæ W.	43 29 51	4173	44 38 44	4103	45 48 43	4098	46 59 44	3990
	Jupiter E.	31 55 28	3098	30 27 4	3081	28 58 31	3072	27 29 48	2065
	Mars E.	52 11 50	2308	50 47 42	2295	49 23 25	2286	47 58 59	2279
	SUN E.	81 27 39	2391	80 5 12	2383	78 42 36	2374	77 19 50	2365
16	Antares W.	97 24 27	2098	98 54 42	2088	100 25 10	2077	101 55 52	2065
	α Aquilæ W.	53 8 25	2736	54 24 34	2694	55 41 27	2666	56 59 1	2619
	Mars E.	40 54 11	2221	39 28 39	2221	38 2 55	2210	36 36 58	2199
	SUN E.	70 23 12	2313	68 59 16	2301	67 35 6	2289	66 10 42	2277
17	α Aquilæ W.	63 36 25	2454	64 57 40	2426	66 19 27	2398	67 41 46	2371
	Mars E.	29 23 53	2143	27 56 35	2132	26 29 4	2122	25 1 21	2113

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Dist.	XVh.	P. L. of Dist.	XVIIIh.	P. L. of Dist.	XXh.	P. L. of Dist.
10	Spica W.	78° 5' 4"	3061	79° 35' 15"	3069	81° 5' 16"	3017	82° 35' 8"	3034
	Saturn W.	36 34 55	3066	36 5 50	3073	39 36 36	3061	41 7 13	3087
	Antares W.	33 3 46	3190	34 30 19	3173	35 57 1	3168	37 23 49	3163
	Fomalhaut E.	56 50 8	3433	55 28 18	3447	54 6 55	3478	52 46 1	3500
	α Pegasi E.	71 28 28	3018	70 4 37	3331	68 41 3	3348	67 17 47	3363
	Jupiter E.	84 36 58	3062	83 7 50	3060	81 38 52	3068	80 10 3	3076
	Mars E.	102 19 54	3265	100 55 1	3273	99 30 18	3261	98 5 44	3288
	SUN E.	130 30 54	3307	129 8 0	3274	127 45 14	3261	126 22 36	3309
11	Spica W.	90 2 20	3066	91 31 24	3061	93 0 21	3066	94 29 12	3070
	Saturn W.	48 38 22	3016	50 8 15	3021	51 38 2	3026	53 7 44	3029
	Antares W.	44 38 42	3153	46 5 47	3163	47 32 52	3163	48 59 58	3163
	Fomalhaut E.	46 9 34	3092	44 52 6	3700	43 35 19	3742	42 19 16	3786
	α Pegasi E.	60 25 57	3446	59 4 33	3466	57 43 30	3484	56 22 48	3505
	Jupiter E.	72 48 9	3106	71 20 9	3113	69 52 15	3119	68 24 28	3123
	Mars E.	91 5 6	3323	89 41 21	3326	88 17 42	3333	86 54 9	3336
	SUN E.	119 31 26	3421	118 9 33	3436	116 47 46	3431	115 26 4	3436
12	Spica W.	101 52 15	3067	103 20 40	3069	104 49 3	3061	106 17 24	3092
	Saturn W.	60 35 7	3043	62 4 26	3045	63 33 43	3046	65 2 59	3047
	Antares W.	56 15 34	3160	57 42 43	3148	59 9 54	3148	60 37 6	3146
	Fomalhaut E.	36 12 21	4090	35 2 10	4172	33 53 17	4263	32 45 50	4366
	α Pegasi E.	49 45 15	3022	48 27 4	3049	47 9 23	3080	45 52 15	3713
	Jupiter E.	61 6 41	3188	59 39 18	3141	58 11 58	3142	56 44 39	3143
	Mars E.	79 57 38	3366	78 34 31	3366	77 11 26	3369	75 48 23	3369
	SUN E.	108 38 40	3450	107 17 20	3452	105 56 2	3453	104 34 45	3454
13	Saturn W.	72 29 16	3043	73 58 35	3043	75 27 56	3039	76 57 21	3038
	Antares W.	67 53 41	3134	69 21 9	3131	70 48 41	3128	72 16 17	3123
	α Pegasi E.	39 36 11	3026	38 23 17	3063	37 11 21	4046	36 0 27	4116
	Jupiter E.	49 28 10	3141	48 0 50	3188	46 33 27	3136	45 6 1	3133
	Mars E.	68 53 13	3366	67 30 9	3364	66 7 2	3364	64 43 53	3361
	SUN E.	97 48 25	3450	96 27 5	3448	95 5 43	3446	93 44 18	3442
14	Saturn W.	84 25 33	3014	85 55 28	3008	87 25 31	3001	88 55 42	2996
	Antares W.	79 35 43	3086	81 3 55	3091	82 32 15	3084	84 0 44	3077
	α Aquilæ W.	39 6 43	4506	40 10 28	4413	41 15 38	4328	42 22 8	4246
	Jupiter E.	37 47 50	3112	36 19 55	3106	34 51 53	3101	33 23 44	3096
	Mars E.	57 47 4	3329	56 23 26	3324	54 59 42	3317	53 35 50	3310
	SUN E.	86 56 6	3418	85 34 10	3412	84 12 7	3406	82 49 57	3399
15	Saturn W.	96 28 52	2964	98 0 2	2946	99 31 23	2936	101 2 56	2927
	Antares W.	91 25 27	3037	92 54 54	3027	94 24 33	3018	95 54 24	3008
	α Aquilæ W.	48 11 43	3926	49 24 37	3873	50 38 24	3824	51 53 1	3779
	Jupiter E.	26 0 55	3067	24 31 53	3049	23 2 41	3041	21 33 19	3031
	Mars E.	46 34 23	3270	45 9 36	3261	43 44 39	3252	42 19 31	3242
	SUN E.	75 56 53	3365	74 33 45	3345	73 10 26	3336	71 46 55	3326
16	Antares W.	103 26 48	3064	104 57 58	2942	106 29 23	2931	108 1 2	2920
	α Aquilæ W.	58 17 15	3563	59 36 8	3549	60 55 38	3516	62 15 44	3485
	Mars E.	35 10 48	3188	33 44 24	3177	32 17 47	3166	30 50 57	3154
	SUN E.	64 46 4	3266	63 21 11	3262	61 56 3	3239	60 30 40	3226
17	α Aquilæ W.	69 4 36	3340	70 27 56	3319	71 51 45	3294	73 16 3	3270
	Mars E.	23 33 27	3104	22 5 22	3096	20 37 7	3088	19 8 43	3082

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Dist.	IIIh.	P. L. of Dist.	VIh.	P. L. of Dist.	IXh.	P. L. of Dist.
17	SUN	E.	59° 5' 1"	2211	57° 39' 5"	2197	56° 12' 52"	2183	54° 46' 23"	2169
18	α Aquilæ	W.	74 40 49	2247	76 6 2	2226	77 31 41	2204	78 57 46	2182
	SUN	E.	47 29 35	2096	46 1 20	2081	44 32 47	2066	43 3 55	2051
19	α Aquilæ	W.	86 14 13	2086	87 42 37	2072	89 11 21	2056	90 40 25	2040
	SUN	E.	35 35 9	2061	34 4 32	2049	32 33 40	2037	31 2 33	2046
24	SUN	W.	30 11 29	2244	31 51 41	2236	33 32 4	2230	35 12 36	2225
	Regulus	E.	54 41 11	2182	52 52 17	2180	51 3 20	2179	49 14 21	2178
	Spica	E.	108 19 25	2206	106 31 9	2206	104 42 50	2204	102 54 29	2203
25	SUN	W.	43 36 35	2212	45 17 31	2212	46 58 27	2213	48 39 22	2214
	Regulus	E.	40 9 22	2180	38 20 25	2182	36 31 31	2185	34 42 41	2186
	Spica	E.	93 52 30	2204	92 4 8	2206	90 15 49	2208	88 27 34	2211
26	SUN	W.	57 3 21	2227	58 43 57	2221	60 24 27	2232	62 4 50	2240
	Spica	E.	79 27 26	2229	77 39 42	2224	75 52 5	2229	74 4 36	2245
	Saturn	E.	119 44 40	2189	117 55 56	2192	116 7 18	2196	114 18 47	2203
27	SUN	W.	70 25 2	2269	72 4 40	2275	73 44 9	2282	75 23 29	2288
	Venus	W.	27 6 1	2204	28 44 50	2206	30 23 48	2203	32 2 53	2201
	Pollux	W.	26 33 31	2266	28 13 12	2238	29 53 33	2216	31 34 25	2498
	Spica	E.	65 9 22	2277	63 22 48	2282	61 36 26	2292	59 50 15	2300
	Saturn	E.	105 18 10	2231	103 30 28	2237	101 42 56	2244	99 55 34	2251
28	SUN	W.	83 37 40	2277	85 15 58	2282	86 54 6	2243	88 32 3	2261
	Venus	W.	40 18 33	2266	41 57 34	2269	43 36 30	2263	45 15 21	2267
	Pollux	W.	40 3 21	2455	41 45 38	2463	43 27 58	2462	45 10 19	2461
	Spica	E.	51 2 24	2345	49 17 30	2355	47 32 50	2364	45 48 24	2375
	Saturn	E.	91 1 16	2286	89 14 56	2294	87 28 48	2302	85 42 51	2309
	Antares	E.	96 54 50	2364	95 10 24	2373	93 26 9	2380	91 42 5	2387
29	SUN	W.	96 38 56	2266	98 15 43	2702	99 52 19	2712	101 28 43	2721
	Pollux	W.	53 41 44	2463	55 23 49	2467	57 5 48	2472	58 47 41	2477
	Venus	W.	53 27 57	2265	55 6 5	2240	56 44 5	2247	58 21 56	2254
	Regulus	W.	17 0 22	2269	18 44 41	2277	20 28 49	2284	22 12 46	2283
	Spica	E.	37 10 16	2426	35 27 33	2450	33 45 10	2466	32 3 9	2462
	Saturn	E.	76 55 57	2249	75 11 9	2267	73 26 33	2266	71 42 10	2275
30	Antares	E.	83 4 34	2428	81 21 39	2437	79 38 57	2446	77 56 28	2456
	SUN	W.	109 27 41	2767	111 2 52	2776	112 37 51	2786	114 12 37	2796
	Pollux	W.	67 15 8	2267	68 56 12	2214	70 37 6	2221	72 17 50	2227
	Venus	W.	66 28 53	2269	68 5 48	2266	69 42 33	2703	71 19 9	2710
	Regulus	W.	30 49 35	2423	32 32 22	2442	34 14 57	2450	35 57 20	2459
	Saturn	E.	63 3 15	2417	61 20 4	2426	59 37 6	2434	57 54 20	2443
31	Antares	E.	69 27 17	2268	67 46 8	2213	66 5 13	2223	64 24 32	2234
	SUN	W.	122 3 22	2244	123 36 53	2263	125 10 12	2263	126 43 18	2273
	Pollux	W.	80 39 2	2266	82 18 45	2273	83 58 17	2281	85 37 38	2289
	Venus	W.	79 19 38	2748	80 55 14	2756	82 30 40	2764	84 5 55	2773
	Regulus	W.	44 26 19	2260	46 7 32	2269	47 48 33	2217	49 29 22	2226
	Saturn	E.	49 23 33	2427	47 42 1	2426	46 0 42	2204	44 19 35	2213
	Antares	E.	56 4 53	2291	54 25 45	2202	52 46 53	2215	51 8 18	2220
	α Aquilæ	E.	103 29 32	2018	101 59 42	2021	100 29 55	2024	99 0 12	2027

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Dist.	XVh.	P. L. of Dist.	XVIIIh.	P. L. of Dist.	XXIh.	P. L. of Dist.
17	SUN E.	53° 19' 37"	3154	51° 52' 33"	3189	50° 25' 11"	3125	48° 57' 32"	3110
18	α Aquilæ W.	80 24 17	3162	81 51 12	3143	83 18 30	3124	84 46 10	3105
	SUN E.	41 34 45	3036	40 5 17	3022	38 35 32	3006	37 5 29	2994
19	α Aquilæ W.	92 9 48	3026	93 39 29	3013	95 9 26	3001	96 39 38	2989
	SUN E.	29 31 12	2936	27 59 39	2927	26 27 55	2920	24 56 1	2914
24	SUN W.	36 53 15	2620	38 34 0	2617	40 14 49	2615	41 55 41	2614
	Regulus E.	47 25 21	2178	45 36 21	2178	43 47 21	2178	41 58 21	2179
	Spica E.	101 6 6	2202	99 17 42	2202	97 29 17	2202	95 40 53	2203
25	SUN W.	50 20 16	2616	52 1 7	2616	53 41 55	2620	55 22 40	2623
	Regulus E.	32 53 55	2190	31 5 13	2194	29 16 36	2197	27 28 4	2201
	Spica E.	86 39 23	2214	84 51 16	2217	83 3 14	2220	81 15 17	2225
26	SUN W.	63 45 7	2545	65 25 17	2561	67 5 20	2556	68 45 15	2562
	Spica E.	72 17 15	2261	70 30 3	2287	68 43 0	2263	66 56 6	2270
	Saturn E.	112 30 24	2208	110 42 8	2213	108 54 0	2219	107 6 1	2225
27	SUN W.	77 2 40	2596	78 41 41	2604	80 20 31	2611	81 59 11	2619
	Venus W.	33 42 1	2589	35 21 11	2590	37 0 20	2591	38 39 28	2598
	Pollux W.	33 15 41	2484	34 57 17	2473	36 39 8	2465	38 21 10	2459
	Spica E.	58 4 16	2309	56 18 29	2317	54 32 54	2326	52 47 32	2335
	Saturn E.	98 8 22	2268	96 21 20	2264	94 34 28	2272	92 47 47	2279
28	SUN W.	90 9 49	2660	91 47 23	2668	93 24 46	2677	95 1 57	2686
	Venus W.	46 54 6	2612	48 32 45	2617	50 11 17	2628	51 49 41	2629
	Pollux W.	46 52 41	2452	48 35 2	2454	50 17 20	2457	51 59 34	2460
	Spica E.	44 4 13	2386	42 20 18	2396	40 36 40	2410	38 53 19	2422
	Saturn E.	83 57 5	2317	82 11 31	2325	80 26 8	2333	78 40 57	2341
	Antares E.	89 58 12	2395	88 14 30	2403	86 31 0	2411	84 47 41	2419
29	SUN W.	103 4 55	2730	104 40 55	2739	106 16 43	2749	107 52 18	2758
	Pollux W.	60 29 26	2482	62 11 4	2488	63 52 34	2494	65 33 55	2500
	Venus W.	59 59 38	2660	61 37 11	2668	63 14 34	2675	64 51 48	2681
	Regulus W.	23 56 31	2401	25 40 4	2409	27 23 26	2417	29 6 36	2425
	Spica E.	30 21 31	2500	28 40 18	2520	26 59 33	2543	25 19 19	2569
	Saturn E.	69 57 59	2383	68 14 0	2391	66 30 13	2400	64 46 38	2408
	Antares E.	76 14 11	2464	74 32 7	2474	72 50 17	2483	71 8 40	2493
30	SUN W.	115 47 11	2806	117 21 32	2815	118 55 41	2824	120 29 38	2834
	Pollux W.	73 58 25	2636	75 38 50	2642	77 19 5	2650	78 59 9	2658
	Venus W.	72 55 35	2719	74 31 50	2725	76 7 56	2733	77 43 52	2741
	Regulus W.	37 39 31	2467	39 21 30	2475	41 3 18	2484	42 44 54	2492
	Saturn E.	56 11 46	2451	54 29 24	2460	52 47 15	2469	51 5 18	2477
	Antares E.	62 44 6	2544	61 3 54	2555	59 23 57	2567	57 44 17	2579
31	SUN W.	128 16 11	2983	129 48 51	2994	131 21 17	2995	132 53 30	2915
	Pollux W.	87 16 48	2697	88 55 47	2696	90 34 34	2615	92 13 9	2623
	Venus W.	85 41 0	2779	87 15 55	2788	88 50 39	2795	90 25 13	2803
	Regulus W.	51 9 59	2636	52 50 24	2643	54 30 38	2651	56 10 40	2659
	Saturn E.	42 38 40	2522	40 57 58	2533	39 17 30	2542	37 37 15	2551
	Antares E.	49 30 2	2642	47 52 4	2657	46 14 26	2672	44 37 8	2687
	α Aquilæ E.	97 30 33	3032	96 1 0	3038	94 31 34	3044	93 2 16	3051

AT GREENWICH APPARENT NOON.

AT GREENWICH APPARENT NOON.										
Day of the Week.	Day of the Month.	THE SUN'S						Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, to be subtracted from	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Semi-diameter.	added to Apparent Time.			
Mon.	1	4 ^h 38 ^m 34.77 ^s	10.235	N. 22° 6' 6.0"	19.88	15' 48.24"	68.44	2 ^m 24.01 ^s	0.378	
Tues.	2	4 42 40.60	10.250	22 15 51.6	18.91	15 48.11	68.49	2 14.75	0.393	
Wed.	3	4 46 46.80	10.265	22 23 13.9	17.93	15 47.99	68.54	2 5.12	0.408	
Thur.	4	4 50 53.96	10.279	22 30 12.7	16.95	15 47.87	68.59	1 55.15	0.422	
Fri.	5	4 55 0.25	10.293	22 36 47.8	15.97	15 47.75	68.64	1 44.84	0.436	
Sat.	6	4 59 7.47	10.306	22 42 59.2	14.98	15 47.63	68.68	1 34.20	0.449	
Sun.	7	5 3 15.00	10.318	22 48 46.8	13.98	15 47.52	68.73	1 23.26	0.462	
Mon.	8	5 7 22.82	10.330	22 54 10.4	12.98	15 47.41	68.77	1 12.03	0.474	
Tues.	9	5 11 30.91	10.341	22 59 9.7	11.97	15 47.31	68.80	1 0.52	0.485	
Wed.	10	5 15 39.25	10.351	23 3 44.8	10.96	15 47.20	68.83	0 48.76	0.495	
Thur.	11	5 19 47.84	10.361	23 7 55.6	9.95	15 47.10	68.86	0 36.76	0.504	
Fri.	12	5 23 56.65	10.369	23 11 42.2	8.93	15 47.00	68.89	0 24.55	0.512	
Sat.	13	5 28 5.65	10.377	23 15 4.5	7.91	15 46.91	68.91	0 12.14	0.520	
Sun.	14	5 32 14.81	10.383	23 18 2.0	6.89	15 46.82	68.93	0 0.43	0.527	
Mon.	15	5 36 24.12	10.389	23 20 34.9	5.86	15 46.74	68.94	0 18.14	0.533	
Tues.	16	5 40 33.56	10.394	23 22 43.1	4.83	15 46.66	68.95	0 25.98	0.538	
Wed.	17	5 44 43.11	10.397	23 24 26.6	3.79	15 46.59	68.96	0 38.94	0.542	
Thur.	18	5 48 52.75	10.399	23 25 45.4	2.76	15 46.53	68.97	0 51.99	0.544	
Fri.	19	5 53 2.42	10.400	23 26 39.4	1.73	15 46.47	68.97	1 5.06	0.545	
Sat.	20	5 57 12.09	10.400	23 27 8.5	0.70	15 46.41	68.97	1 18.14	0.545	
Sun.	21	6 1 21.75	10.399	23 27 12.9	0.33	15 46.36	68.97	1 31.20	0.544	
Mon.	22	6 5 31.37	10.397	23 26 52.5	1.37	15 46.32	68.97	1 44.24	0.542	
Tues.	23	6 9 40.93	10.394	23 26 7.2	2.40	15 46.28	68.96	1 57.21	0.539	
Wed.	24	6 13 50.40	10.389	23 24 57.2	3.43	15 46.24	68.95	2 10.08	0.535	
Thur.	25	6 17 59.75	10.384	23 23 22.5	4.46	15 46.21	68.93	2 22.83	0.529	
Fri.	26	6 22 8.95	10.377	23 21 23.1	5.49	15 46.19	68.91	2 35.44	0.522	
Sat.	27	6 26 17.97	10.370	23 18 59.1	6.51	15 46.17	68.89	2 47.87	0.514	
Sun.	28	6 30 26.80	10.361	23 16 10.6	7.53	15 46.16	68.86	3 0.11	0.505	
Mon.	29	6 34 35.42	10.352	23 12 57.6	8.55	15 46.15	68.83	3 12.14	0.496	
Tues.	30	6 38 43.80	10.340	23 9 20.1	9.57	15 46.15	68.80	3 23.94	0.485	
Wed.	31	6 42 51.91	10.330	N. 23 5 18.3	10.58	15 46.15	68.77	3 35.46	0.474	

NOTE. — Mean Time of the Semi-diameter passing may be found by subtracting 0s.19 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be added to	Diff. for 1 hour.	Sidereal Time.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	subtracted from Mean Time.		
Mon.	1	^h 4 ^m 38 ^s 35.17	10.235	N. 22° 8' 6.8"	19.88	^m 2 ^s 23.98	0.378	^h 4 ^m 40 ^s 59.15
Tues.	2	4 42 40.98	10.250	22 15 52.3	18.91	2 14.73	0.393	4 44 55.71
Wed.	3	4 46 47.16	10.265	22 23 14.5	17.93	2 5.10	0.408	4 48 52.26
Thur.	4	4 50 53.69	10.279	22 30 13.2	16.95	1 55.13	0.422	4 52 48.82
Fri.	5	4 55 0.55	10.293	22 36 48.3	15.97	1 44.83	0.436	4 56 45.38
Sat.	6	4 59 7.74	10.306	22 42 59.6	14.98	1 34.19	0.449	5 0 41.93
Sun.	7	5 3 15.24	10.318	22 48 47.1	13.98	1 23.25	0.462	5 4 38.49
Mon.	8	5 7 23.03	10.330	22 54 10.6	12.98	1 12.02	0.474	5 8 35.05
Tues.	9	5 11 31.09	10.341	22 59 9.9	11.97	1 0.51	0.485	5 12 31.60
Wed.	10	5 15 39.40	10.351	23 3 44.9	10.96	0 48.75	0.495	5 16 28.15
Thur.	11	5 19 47.95	10.361	23 7 55.7	9.95	0 36.76	0.504	5 20 24.71
Fri.	12	5 23 56.72	10.369	23 11 42.3	8.93	0 24.55	0.512	5 24 21.27
Sat.	13	5 28 5.69	10.377	23 15 4.5	7.91	0 12.14	0.520	5 28 17.83
Sun.	14	5 32 14.81	10.383	23 18 2.0	6.89	0 0.42	0.527	5 32 14.39
Mon.	15	5 36 24.08	10.389	23 20 34.9	5.86	0 13.14	0.533	5 36 10.94
Tues.	16	5 40 33.48	10.394	23 22 43.1	4.83	0 25.98	0.538	5 40 7.50
Wed.	17	5 44 43.00	10.397	23 24 26.6	3.79	0 38.94	0.542	5 44 4.06
Thur.	18	5 48 52.60	10.399	23 25 45.3	2.76	0 51.98	0.544	5 48 0.62
Fri.	19	5 53 2.23	10.400	23 26 39.3	1.73	1 5.05	0.545	5 51 57.18
Sat.	20	5 57 11.86	10.400	23 27 8.5	0.70	1 18.13	0.545	5 55 53.73
Sun.	21	6 1 21.48	10.399	23 27 12.9	0.33	1 31.19	0.544	5 59 50.29
Mon.	22	6 5 31.07	10.397	23 26 52.5	1.37	1 44.22	0.542	6 3 46.85
Tues.	23	6 9 40.59	10.394	23 26 7.3	2.40	1 57.19	0.539	6 7 43.40
Wed.	24	6 13 50.02	10.389	23 24 57.3	3.43	2 10.06	0.535	6 11 39.96
Thur.	25	6 17 59.33	10.384	23 23 22.7	4.46	2 22.81	0.529	6 15 36.52
Fri.	26	6 22 8.49	10.377	23 21 23.4	5.49	2 35.42	0.522	6 19 33.07
Sat.	27	6 26 17.48	10.370	23 18 59.4	6.51	2 47.85	0.514	6 23 29.63
Sun.	28	6 30 26.28	10.361	23 16 11.0	7.53	3 0.09	0.505	6 27 26.19
Mon.	29	6 34 34.86	10.352	23 12 58.1	8.55	3 12.11	0.496	6 31 22.75
Tues.	30	6 38 43.21	10.340	23 9 20.7	9.57	3 23.91	0.485	6 35 19.30
Wed.	31	6 42 51.29	10.330	N. 23° 5' 18.9"	10.58	3 35.43	0.474	6 39 15.86

NOTE. — The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal Oh.
		True LONGITUDE.		Diff. for 1 hour.	LATITUDE.			
		λ	λ'					
1	153	71° 12' 39.5	12° 28.1	143.58	+0.71	0.0062561	24.6	19 15 50.97
2	154	72 10 5.0	9 53.4	143.53	0.79	.0063143	24.0	19 11 55.06
3	155	73 7 29.3	7 17.5	143.49	0.84	.0063712	23.4	19 7 59.15
4	156	74 4 52.6	4 40.7	143.45	0.85	.0064267	22.8	19 4 3.24
5	157	75 2 15.0	2 3.0	143.41	0.84	.0064810	22.3	19 0 7.33
6	158	75 59 36.6	59 24.4	143.38	0.80	.0065341	21.8	18 56 11.42
7	159	76 56 57.4	56 45.0	143.35	0.73	.0065859	21.2	18 52 15.51
8	160	77 54 17.5	54 5.0	143.32	0.63	.0066363	20.6	18 48 19.60
9	161	78 51 37.1	51 24.4	143.30	0.51	.0066852	20.0	18 44 23.69
10	162	79 48 56.1	48 43.3	143.28	0.38	.0067327	19.4	18 40 27.77
11	163	80 46 14.7	46 1.7	143.26	0.25	.0067786	18.7	18 36 31.86
12	164	81 43 32.9	43 19.7	143.24	+0.12	.0068227	18.0	18 32 35.95
13	165	82 40 50.7	40 37.3	143.23	-0.01	.0068649	17.2	18 28 40.04
14	166	83 38 8.1	37 54.6	143.21	0.12	.0069052	16.3	18 24 44.13
15	167	84 35 25.2	35 11.6	143.20	0.21	.0069433	15.4	18 20 48.22
16	168	85 32 42.0	32 28.3	143.18	0.27	.0069790	14.4	18 16 52.31
17	169	86 29 58.6	29 44.6	143.17	0.29	.0070123	13.4	18 12 56.40
18	170	87 27 14.8	27 0.6	143.15	0.29	.0070432	12.3	18 9 0.49
19	171	88 24 30.6	24 16.3	143.14	0.26	.0070715	11.2	18 5 4.58
20	172	89 21 46.0	21 31.6	143.12	0.21	.0070971	10.1	18 1 8.66
21	173	90 19 1.0	18 46.4	143.11	0.13	.0071201	9.1	17 57 12.75
22	174	91 16 15.6	16 0.8	143.09	-0.02	.0071405	8.0	17 53 16.84
23	175	92 13 29.8	13 14.8	143.08	+0.11	.0071583	6.9	17 49 20.93
24	176	93 10 43.6	10 28.4	143.06	0.25	.0071737	5.9	17 45 25.02
25	177	94 7 56.9	7 41.5	143.04	0.39	.0071866	4.9	17 41 29.10
26	178	95 5 9.7	4 54.2	143.02	0.52	.0071971	4.0	17 37 33.19
27	179	96 2 22.1	2 6.4	143.00	0.63	.0072055	3.1	17 33 37.28
28	180	96 59 34.0	59 18.1	142.98	0.73	.0072118	2.2	17 29 41.37
29	181	97 56 45.5	56 29.5	142.97	0.81	.0072161	1.4	17 25 45.46
30	182	98 53 56.6	53 40.5	142.95	0.86	.0072186	0.7	17 21 49.55
31	183	99 51 7.4	50 51.1	142.94	+0.87	0.0072195	0.0	17 17 53.64

NOTE: λ corresponds to the true equinox of the date, λ' to the mean equinox of January 0d.

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	THE MOON'S								
	SEMIDIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	
1	15 39.0	15 34.9	57 19.6	-1.25	57 4.6	-1.25	^h 9 ^m 18.9	2.02	^d 10.2
2	15 30.8	15 26.7	56 49.5	1.25	56 34.6	1.24	10 7.5	2.03	11.2
3	15 22.7	15 18.7	56 19.7	1.23	56 5.1	1.21	10 56.6	2.06	12.2
4	15 14.8	15 11.0	55 50.7	1.18	55 36.7	1.15	11 46.2	2.07	13.2
5	15 7.3	15 3.8	55 23.1	1.10	55 10.2	1.04	12 36.0	2.07	14.2
6	15 0.5	14 57.4	54 58.1	0.97	54 46.8	0.89	13 25.6	2.05	15.2
7	14 54.6	14 52.2	54 36.7	0.79	54 27.8	0.67	14 14.4	2.01	16.2
8	14 50.2	14 48.7	54 20.5	0.54	54 14.8	0.40	15 2.0	1.96	17.2
9	14 47.6	14 47.1	54 10.9	-0.24	54 9.0	-0.07	15 48.3	1.90	18.2
10	14 47.2	14 47.9	54 9.3	+0.11	54 11.8	+0.31	16 33.3	1.85	19.2
11	14 49.2	14 51.2	54 16.6	0.51	54 23.9	0.71	17 17.2	1.82	20.2
12	14 53.8	14 57.2	54 33.7	0.92	54 45.9	1.12	18 0.7	1.81	21.2
13	15 1.2	15 5.8	55 0.6	1.32	55 17.6	1.51	18 44.5	1.84	22.2
14	15 11.1	15 16.9	55 36.9	1.69	55 58.3	1.86	19 29.3	1.90	23.2
15	15 23.2	15 29.9	56 21.5	2.00	56 46.3	2.11	20 16.0	2.00	24.2
16	15 37.0	15 44.2	57 12.2	2.19	57 38.8	2.23	21 5.5	2.13	25.2
17	15 51.5	15 58.7	58 5.6	2.22	58 32.1	2.16	21 58.3	2.28	26.2
18	16 5.7	16 12.2	58 57.6	2.06	59 21.5	1.91	22 54.8	2.42	27.2
19	16 18.1	16 23.3	59 43.3	1.70	60 2.4	1.45	23 54.5	2.53	28.2
20	16 27.7	16 31.0	60 18.2	1.17	60 30.4	0.85	δ		29.2
21	16 33.2	16 34.3	60 38.6	+0.51	60 42.7	+0.17	0 55.9	2.57	0.9
22	16 34.3	16 33.3	60 42.8	-0.16	60 38.9	-0.48	1 57.3	2.54	1.9
23	16 31.2	16 28.2	60 31.2	0.77	60 20.3	1.03	2 57.1	2.44	2.9
24	16 24.4	16 20.0	60 6.5	1.25	59 50.2	1.44	3 54.0	2.31	3.9
25	16 15.1	16 9.7	59 32.0	1.58	59 12.4	1.67	4 48.0	2.19	4.9
26	16 4.2	15 58.5	58 51.9	1.72	58 31.0	1.75	5 39.4	2.10	5.9
27	15 52.7	15 47.0	58 10.0	1.75	57 49.1	1.72	6 28.8	2.04	6.9
28	15 41.5	15 36.1	57 28.7	1.68	57 8.9	1.62	7 17.3	2.01	7.9
29	15 30.9	15 26.0	56 49.8	1.55	56 31.7	1.47	8 5.3	2.00	8.9
30	15 21.3	15 16.8	56 14.5	1.40	55 58.2	1.32	8 53.6	2.02	9.9
31	15 12.7	15 8.8	55 42.9	-1.23	55 28.6	-1.15	9 42.3	2.04	10.9

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
MONDAY 1.					WEDNESDAY 3.				
0	13 41 42.69	2.1161	S. 6° 4' 6.6	10.456	0	15 23 45.41	2.1429	S. 13° 28' 17.1	7.705
1	13 43 49.65	2.1161	6 14 32.8	10.418	1	15 25 54.01	2.1426	13 36 0.8	7.692
2	13 45 56.62	2.1161	6 24 56.8	10.380	2	15 28 2.67	2.1446	13 43 40.1	7.618
3	13 48 3.59	2.1162	6 35 18.4	10.341	3	15 30 11.37	2.1455	13 51 14.9	7.544
4	13 50 10.56	2.1163	6 45 37.7	10.300	4	15 32 20.13	2.1464	13 58 45.3	7.469
5	13 52 17.54	2.1164	6 55 54.5	10.259	5	15 34 28.94	2.1473	14 6 11.1	7.393
6	13 54 24.53	2.1165	7 6 8.8	10.217	6	15 36 37.80	2.1482	14 13 32.4	7.317
7	13 56 31.53	2.1167	7 16 20.5	10.174	7	15 38 46.71	2.1490	14 20 49.1	7.240
8	13 58 38.54	2.1169	7 26 29.7	10.130	8	15 40 55.68	2.1499	14 28 1.2	7.162
9	14 0 45.57	2.1172	7 36 36.2	10.086	9	15 43 4.70	2.1507	14 35 8.6	7.084
10	14 2 52.61	2.1175	7 46 40.1	10.041	10	15 45 13.76	2.1516	14 42 11.3	7.005
11	14 4 59.67	2.1178	7 56 41.2	9.995	11	15 47 22.87	2.1524	14 49 9.3	6.926
12	14 7 6.75	2.1181	8 6 39.5	9.948	12	15 49 32.04	2.1532	14 56 2.5	6.847
13	14 9 13.85	2.1185	8 16 35.0	9.901	13	15 51 41.26	2.1540	15 2 50.9	6.767
14	14 11 20.98	2.1189	8 26 27.6	9.852	14	15 53 50.52	2.1548	15 9 34.5	6.687
15	14 13 28.13	2.1193	8 36 17.2	9.803	15	15 55 59.83	2.1556	15 16 13.3	6.606
16	14 15 35.30	2.1197	8 46 3.9	9.753	16	15 58 9.18	2.1563	15 22 47.2	6.524
17	14 17 42.50	2.1202	8 55 47.6	9.702	17	16 0 18.58	2.1571	15 29 16.2	6.443
18	14 19 49.73	2.1207	9 5 28.2	9.650	18	16 2 28.03	2.1579	15 35 40.2	6.359
19	14 21 56.99	2.1212	9 15 5.7	9.598	19	16 4 37.53	2.1587	15 41 59.2	6.276
20	14 24 4.28	2.1217	9 24 40.0	9.545	20	16 6 47.07	2.1594	15 48 13.3	6.192
21	14 26 11.60	2.1223	9 34 11.1	9.491	21	16 8 56.65	2.1601	15 54 22.3	6.108
22	14 28 18.96	2.1229	9 43 39.0	9.436	22	16 11 6.28	2.1608	16 0 26.3	6.024
23	14 30 26.36	2.1235	S. 9° 53' 3.5	9.381	23	16 13 15.95	2.1614	S. 16° 6' 25.2	5.939
TUESDAY 2.					THURSDAY 4.				
0	14 32 33.79	2.1241	S. 10° 2' 24.7	9.325	0	16 15 25.65	2.1621	S. 16° 12' 19.0	5.854
1	14 34 41.26	2.1246	10 11 42.5	9.268	1	16 17 35.40	2.1627	16 18 7.6	5.768
2	14 36 48.77	2.1254	10 20 56.9	9.210	2	16 19 45.18	2.1633	16 23 51.1	5.682
3	14 38 56.31	2.1261	10 30 7.8	9.152	3	16 21 55.00	2.1639	16 29 29.4	5.596
4	14 41 3.90	2.1268	10 39 15.1	9.093	4	16 24 4.85	2.1645	16 35 2.5	5.508
5	14 43 11.53	2.1275	10 48 18.9	9.033	5	16 26 14.74	2.1651	16 40 30.4	5.421
6	14 45 19.20	2.1282	10 57 19.1	8.973	6	16 28 24.67	2.1657	16 45 53.0	5.333
7	14 47 26.92	2.1290	11 6 15.6	8.911	7	16 30 34.63	2.1662	16 51 10.3	5.244
8	14 49 34.68	2.1297	11 15 8.5	8.849	8	16 32 44.62	2.1667	16 56 22.3	5.156
9	14 51 42.49	2.1306	11 23 57.6	8.787	9	16 34 54.64	2.1672	17 1 29.0	5.068
10	14 53 50.34	2.1312	11 32 42.9	8.724	10	16 37 4.69	2.1677	17 6 30.3	4.977
11	14 55 58.24	2.1320	11 41 24.4	8.660	11	16 39 14.76	2.1681	17 11 26.3	4.886
12	14 58 6.18	2.1328	11 50 2.1	8.595	12	16 41 24.86	2.1685	17 16 16.9	4.798
13	15 0 14.18	2.1336	11 58 35.8	8.529	13	16 43 34.98	2.1689	17 21 2.1	4.708
14	15 2 22.22	2.1344	12 7 5.6	8.463	14	16 45 45.13	2.1693	17 25 41.8	4.617
15	15 4 30.31	2.1353	12 15 31.4	8.396	15	16 47 55.30	2.1696	17 30 16.1	4.526
16	15 6 38.45	2.1361	12 23 53.1	8.328	16	16 50 5.48	2.1699	17 34 45.0	4.435
17	15 8 46.64	2.1370	12 32 10.8	8.260	17	16 52 15.68	2.1701	17 39 8.3	4.343
18	15 10 54.88	2.1378	12 40 24.3	8.191	18	16 54 25.90	2.1704	17 43 26.2	4.252
19	15 13 3.17	2.1387	12 48 33.7	8.122	19	16 56 36.13	2.1706	17 47 38.6	4.160
20	15 15 11.52	2.1395	12 56 38.9	8.052	20	16 58 46.38	2.1708	17 51 45.4	4.068
21	15 17 19.91	2.1404	13 4 39.9	7.981	21	17 0 56.64	2.1710	17 55 46.7	3.975
22	15 19 28.36	2.1412	13 12 36.6	7.910	22	17 3 6.91	2.1712	17 59 42.4	3.883
23	15 21 36.86	2.1421	13 20 29.0	7.838	23	17 5 17.18	2.1713	18 3 32.6	3.790
24	15 23 45.41	2.1429	S. 13° 28' 17.1	7.765	24	17 7 27.46	2.1713	S. 18° 7' 17.2	3.697

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
FRIDAY 5.					SUNDAY 7.				
0	17 7 27.46	2.1713	S.18 7 17.2	2.097	0	18 51 8.48	2.1266	S.19 15 36.1	0.840
1	17 9 37.74	2.1714	18 10 56.2	2.098	1	18 53 16.58	2.1242	19 14 43.0	0.932
2	17 11 48.03	2.1714	18 14 29.5	2.010	2	18 55 24.59	2.1227	19 13 44.3	1.024
3	17 13 58.32	2.1714	18 17 57.3	2.416	3	18 57 32.50	2.1211	19 12 40.1	1.116
4	17 16 8.60	2.1714	18 21 19.4	2.223	4	18 59 40.32	2.1206	19 11 30.5	1.206
5	17 18 18.88	2.1713	18 24 35.9	2.228	5	19 1 48.04	2.1278	19 10 15.4	1.297
6	17 20 29.16	2.1713	18 27 46.7	2.123	6	19 3 55.65	2.1261	19 8 54.9	1.388
7	17 22 39.42	2.1710	18 30 51.8	2.098	7	19 6 3.16	2.1243	19 7 28.9	1.478
8	17 24 49.68	2.1708	18 33 51.3	2.943	8	19 8 10.57	2.1226	19 5 57.5	1.568
9	17 26 59.93	2.1708	18 36 45.1	2.849	9	19 10 17.87	2.1208	19 4 20.7	1.658
10	17 29 10.16	2.1704	18 39 33.2	2.754	10	19 12 25.07	2.1191	19 2 38.5	1.748
11	17 31 20.37	2.1701	18 42 15.6	2.660	11	19 14 32.17	2.1173	19 0 50.9	1.837
12	17 33 30.57	2.1698	18 44 52.4	2.566	12	19 16 39.15	2.1155	18 58 58.0	1.926
13	17 35 40.75	2.1694	18 47 23.5	2.470	13	19 18 46.02	2.1136	18 56 59.8	2.014
14	17 37 50.90	2.1691	18 49 48.8	2.375	14	19 20 52.78	2.1117	18 54 56.3	2.103
15	17 40 1.03	2.1687	18 52 8.4	2.279	15	19 22 59.43	2.1098	18 52 47.5	2.191
16	17 42 11.14	2.1683	18 54 22.3	2.184	16	19 25 5.96	2.1079	18 50 33.4	2.279
17	17 44 21.22	2.1678	18 56 30.5	2.088	17	19 27 12.38	2.1060	18 48 14.1	2.366
18	17 46 31.27	2.1673	18 58 32.9	1.993	18	19 29 18.68	2.1040	18 45 49.5	2.453
19	17 48 41.29	2.1667	19 0 29.7	1.898	19	19 31 24.86	2.1020	18 43 19.7	2.540
20	17 50 51.27	2.1661	19 2 20.7	1.803	20	19 33 30.92	2.1000	18 40 44.7	2.626
21	17 53 1.22	2.1656	19 4 6.0	1.707	21	19 35 36.86	2.0980	18 38 4.6	2.712
22	17 55 11.13	2.1648	19 5 45.5	1.612	22	19 37 42.68	2.0960	18 35 19.3	2.798
23	17 57 21.00	2.1641	S.19 7 19.3	1.616	23	19 39 48.38	2.0940	S.18 32 28.9	2.883
SATURDAY 6.					MONDAY 8.				
0	17 59 30.82	2.1634	S.19 8 47.4	1.421	0	19 41 53.96	2.0919	S.18 29 33.4	2.967
1	18 1 40.60	2.1626	19 10 9.8	1.325	1	19 43 59.41	2.0898	18 26 32.9	3.051
2	18 3 50.33	2.1618	19 11 26.4	1.230	2	19 46 4.74	2.0877	18 23 27.3	3.135
3	18 6 0.01	2.1610	19 12 37.3	1.134	3	19 48 9.94	2.0856	18 20 16.7	3.219
4	18 8 9.65	2.1601	19 13 42.5	1.039	4	19 50 15.01	2.0835	18 17 1.0	3.302
5	18 10 19.23	2.1592	19 14 42.0	0.944	5	19 52 19.95	2.0813	18 13 40.4	3.385
6	18 12 28.75	2.1583	19 15 35.8	0.849	6	19 54 24.77	2.0792	18 10 14.8	3.468
7	18 14 38.22	2.1573	19 16 23.9	0.754	7	19 56 29.46	2.0770	18 6 44.3	3.550
8	18 16 47.63	2.1563	19 17 6.3	0.659	8	19 58 34.01	2.0749	18 3 8.8	3.631
9	18 18 56.98	2.1553	19 17 43.0	0.564	9	20 0 38.44	2.0727	17 59 28.5	3.712
10	18 21 6.26	2.1543	19 18 14.0	0.470	10	20 2 42.74	2.0706	17 55 43.4	3.798
11	18 23 15.48	2.1531	19 18 39.3	0.375	11	20 4 46.91	2.0683	17 51 53.4	3.873
12	18 25 24.63	2.1520	19 18 59.0	0.280	12	20 6 50.94	2.0661	17 47 58.6	3.953
13	18 27 33.71	2.1508	19 19 13.0	0.185	13	20 8 54.84	2.0639	17 43 59.0	4.033
14	18 29 42.72	2.1496	19 19 21.3	0.092	14	20 10 58.61	2.0618	17 39 54.7	4.112
15	18 31 51.66	2.1483	19 19 24.0	0.002	15	20 13 2.25	2.0596	17 35 45.6	4.191
16	18 34 0.52	2.1470	19 19 21.1	0.096	16	20 15 5.76	2.0574	17 31 31.8	4.269
17	18 36 9.30	2.1457	19 19 12.5	0.190	17	20 17 9.13	2.0551	17 27 13.3	4.347
18	18 38 18.01	2.1444	19 18 58.3	0.283	18	20 19 12.37	2.0529	17 22 50.2	4.424
19	18 40 26.64	2.1431	19 18 38.5	0.375	19	20 21 15.47	2.0506	17 18 22.4	4.501
20	18 42 35.18	2.1417	19 18 13.2	0.469	20	20 23 18.44	2.0484	17 13 50.1	4.577
21	18 44 43.64	2.1403	19 17 42.3	0.562	21	20 25 21.28	2.0462	17 9 13.2	4.653
22	18 46 52.01	2.1388	19 17 5.8	0.655	22	20 27 23.98	2.0440	17 4 31.8	4.728
23	18 49 0.29	2.1373	19 16 23.7	0.748	23	20 29 26.55	2.0417	16 59 45.8	4.803
24	18 51 8.48	2.1358	S.19 15 36.1	0.840	24	20 31 28.98	2.0395	S.16 54 55.4	4.878

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
TUESDAY 9.					THURSDAY 11.				
0	20 31 28.98	2.0826	S. 16° 54' 55.4"	4.878	0	22 6 59.79	1.9478	S. 11° 43' 52.1"	7.597
1	20 33 31.28	2.0878	16 50 0.5	4.938	1	22 8 56.59	1.9460	11 35 56.7	7.548
2	20 35 33.45	2.0881	16 45 1.1	5.026	2	22 10 53.31	1.9446	11 27 58.3	7.598
3	20 37 35.48	2.0898	16 39 57.3	5.090	3	22 12 49.95	1.9433	11 19 56.9	8.048
4	20 39 37.38	2.0906	16 34 49.2	5.173	4	22 14 46.51	1.9421	11 11 52.5	8.098
5	20 41 39.15	2.0938	16 29 36.7	5.244	5	22 16 43.00	1.9409	11 3 45.2	8.147
6	20 43 40.78	2.0981	16 24 19.9	5.318	6	22 18 39.42	1.9397	10 55 34.9	8.198
7	20 45 42.28	2.0980	16 18 58.8	5.387	7	22 20 35.77	1.9386	10 47 21.7	8.243
8	20 47 43.65	2.0917	16 13 33.5	5.480	8	22 22 32.05	1.9378	10 39 5.7	8.291
9	20 49 44.89	2.0106	16 8 3.9	5.528	9	22 24 28.27	1.9364	10 30 46.8	8.338
10	20 51 45.99	2.0173	16 2 30.1	5.598	10	22 26 24.42	1.9354	10 22 25.1	8.388
11	20 53 46.98	2.0192	15 56 52.1	5.668	11	22 28 20.51	1.9344	10 14 0.6	8.431
12	20 55 47.81	2.0180	15 51 9.9	5.737	12	22 30 16.55	1.9334	10 5 33.4	8.477
13	20 57 48.53	2.0109	15 45 23.6	5.806	13	22 32 12.53	1.9325	9 57 3.4	8.523
14	20 59 49.12	2.0087	15 39 33.3	5.873	14	22 34 8.45	1.9316	9 48 30.7	8.568
15	21 1 49.58	2.0086	15 33 38.9	5.941	15	22 36 4.32	1.9306	9 39 55.4	8.611
16	21 3 49.91	2.0044	15 27 40.4	6.009	16	22 38 0.14	1.9296	9 31 17.4	8.655
17	21 5 50.11	2.0023	15 21 37.9	6.074	17	22 39 55.91	1.9289	9 22 36.8	8.698
18	21 7 50.19	2.0003	15 15 31.5	6.140	18	22 41 51.64	1.9280	9 13 53.7	8.741
19	21 9 50.15	1.9992	15 9 21.1	6.206	19	22 43 47.33	1.9278	9 5 8.0	8.783
20	21 11 49.98	1.9981	15 3 6.8	6.271	20	22 45 42.98	1.9273	8 56 19.8	8.825
21	21 13 49.69	1.9941	14 56 48.6	6.336	21	22 47 38.59	1.9266	8 47 29.1	8.868
22	21 15 49.28	1.9921	14 50 26.5	6.400	22	22 49 34.17	1.9260	8 38 35.9	8.907
23	21 17 48.75	1.9901	S. 14° 44' 0.6"	6.468	23	22 51 29.71	1.9254	S. 8° 29' 40.3"	8.947
WEDNESDAY 10.					FRIDAY 12.				
0	21 19 48.09	1.9881	S. 14° 37' 30.9"	6.536	0	22 53 25.22	1.9249	S. 8° 20' 42.3"	8.987
1	21 21 47.31	1.9881	14 30 57.4	6.599	1	22 55 20.70	1.9245	8 11 41.9	9.026
2	21 23 46.42	1.9841	14 24 20.2	6.651	2	22 57 16.16	1.9241	8 2 39.2	9.066
3	21 25 45.41	1.9823	14 17 39.2	6.713	3	22 59 11.60	1.9238	7 53 34.2	9.103
4	21 27 44.29	1.9803	14 10 54.6	6.774	4	23 1 7.02	1.9236	7 44 26.9	9.141
5	21 29 43.05	1.9784	14 4 6.3	6.835	5	23 3 2.42	1.9233	7 35 17.4	9.178
6	21 31 41.70	1.9765	13 57 14.4	6.896	6	23 4 57.81	1.9230	7 26 5.6	9.215
7	21 33 40.24	1.9747	13 50 18.8	6.956	7	23 6 53.18	1.9226	7 16 51.6	9.251
8	21 35 38.67	1.9729	13 43 19.7	7.016	8	23 8 48.55	1.9227	7 7 35.5	9.287
9	21 37 36.99	1.9711	13 36 17.1	7.073	9	23 10 43.91	1.9225	6 58 17.3	9.323
10	21 39 35.20	1.9693	13 29 10.9	7.131	10	23 12 39.27	1.9226	6 48 56.9	9.357
11	21 41 33.31	1.9676	13 22 1.3	7.189	11	23 14 34.63	1.9225	6 39 34.5	9.391
12	21 43 31.31	1.9659	13 14 48.2	7.247	12	23 16 29.99	1.9227	6 30 10.0	9.425
13	21 45 29.21	1.9643	13 7 31.6	7.304	13	23 18 25.36	1.9228	6 20 43.5	9.458
14	21 47 27.01	1.9626	13 0 11.7	7.360	14	23 20 20.73	1.9230	6 11 15.0	9.491
15	21 49 24.71	1.9608	12 52 48.4	7.416	15	23 22 16.11	1.9233	6 1 44.6	9.523
16	21 51 22.31	1.9591	12 45 21.8	7.471	16	23 24 11.51	1.9234	5 52 12.3	9.555
17	21 53 19.81	1.9576	12 37 51.9	7.526	17	23 26 6.93	1.9237	5 42 38.1	9.586
18	21 55 17.22	1.9560	12 30 18.7	7.581	18	23 28 2.36	1.9240	5 33 2.0	9.616
19	21 57 14.54	1.9545	12 22 42.2	7.635	19	23 29 57.81	1.9244	5 23 24.1	9.646
20	21 59 11.76	1.9530	12 15 2.5	7.688	20	23 31 53.29	1.9249	5 13 44.5	9.676
21	22 1 8.90	1.9516	12 7 19.6	7.741	21	23 33 48.80	1.9254	5 4 3.1	9.706
22	22 3 5.95	1.9501	11 59 33.6	7.794	22	23 35 44.34	1.9259	4 54 19.9	9.734
23	22 5 2.91	1.9487	11 51 44.4	7.846	23	23 37 39.91	1.9265	4 44 35.0	9.762
24	22 6 59.79	1.9473	S. 11° 43' 52.1"	7.897	24	23 39 35.52	1.9272	S. 4° 34' 48.5"	9.790

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SATURDAY 13.					MONDAY 15.				
0	23 39 35.52	1.9972	8. 4 34' 48.5	9.790	0	1 13 50.49	2.0208	N. 3 35' 43.0	10.404
1	23 41 31.17	1.9979	4 25 0.3	9.817	1	1 15 51.84	2.0241	3 46 7.1	10.400
2	23 43 26.87	1.9986	4 15 10.5	9.843	2	1 17 53.38	2.0275	3 56 31.0	10.395
3	23 45 22.61	1.9994	4 5 19.2	9.868	3	1 19 55.13	2.0309	4 6 54.5	10.389
4	23 47 18.40	1.9992	3 55 26.3	9.893	4	1 21 57.09	2.0344	4 17 17.7	10.383
5	23 49 14.24	1.9911	3 45 31.9	9.918	5	1 23 59.26	2.0379	4 27 40.4	10.376
6	23 51 10.14	1.9921	3 35 36.1	9.943	6	1 26 1.64	2.0415	4 38 2.7	10.367
7	23 53 6.09	1.9931	3 25 38.8	9.968	7	1 28 4.24	2.0451	4 48 24.5	10.358
8	23 55 2.11	1.9942	3 15 40.1	9.990	8	1 30 7.05	2.0488	4 58 45.7	10.348
9	23 56 58.19	1.9953	3 5 40.0	10.012	9	1 32 10.09	2.0526	5 9 6.3	10.338
10	23 58 54.34	1.9965	2 55 38.6	10.034	10	1 34 13.36	2.0564	5 19 26.3	10.326
11	0 0 50.56	1.9977	2 45 35.9	10.056	11	1 36 16.85	2.0602	5 29 45.5	10.314
12	0 2 46.86	1.9990	2 35 32.0	10.078	12	1 38 20.58	2.0641	5 40 4.0	10.301
13	0 4 43.23	1.9403	2 25 28.8	10.096	13	1 40 24.54	2.0680	5 50 21.6	10.287
14	0 6 39.69	1.9417	2 15 20.4	10.116	14	1 42 28.74	2.0720	6 0 38.4	10.271
15	0 8 36.23	1.9431	2 5 12.9	10.135	15	1 44 33.18	2.0760	6 10 54.2	10.255
16	0 10 32.86	1.9446	1 55 4.2	10.154	16	1 46 37.87	2.0801	6 21 9.0	10.238
17	0 12 29.58	1.9461	1 44 54.4	10.172	17	1 48 42.80	2.0843	6 31 22.8	10.221
18	0 14 26.39	1.9477	1 34 43.6	10.189	18	1 50 47.99	2.0886	6 41 35.5	10.202
19	0 16 23.30	1.9493	1 24 31.7	10.206	19	1 52 53.43	2.0929	6 51 47.0	10.182
20	0 18 20.30	1.9510	1 14 18.9	10.222	20	1 54 59.12	2.0971	7 1 57.3	10.161
21	0 20 17.41	1.9527	1 4 5.1	10.238	21	1 57 5.07	2.1014	7 12 6.4	10.140
22	0 22 14.63	1.9545	0 53 50.4	10.253	22	1 59 11.29	2.1058	7 22 14.1	10.117
23	0 24 11.95	1.9563	8. 0 43 34.8	10.267	23	2 1 17.78	2.1103	N. 7 32 20.5	10.094
SUNDAY 14.					TUESDAY 16.				
0	0 26 9.39	1.9992	8. 0 33 18.4	10.280	0	2 3 24.53	2.1148	N. 7 42 25.4	10.069
1	0 28 6.95	1.9992	0 23 1.2	10.293	1	2 5 31.55	2.1194	7 52 28.8	10.043
2	0 30 4.62	1.9922	0 12 43.2	10.305	2	2 7 38.85	2.1240	8 2 30.6	10.016
3	0 32 2.42	1.9943	8. 0 2 24.5	10.317	3	2 9 46.43	2.1286	8 12 30.8	9.989
4	0 34 0.34	1.9964	N. 0 7 54.9	10.328	4	2 11 54.28	2.1333	8 22 29.3	9.960
5	0 35 58.39	1.9986	0 18 14.9	10.338	5	2 14 2.42	2.1380	8 32 26.1	9.931
6	0 37 56.58	1.9709	0 28 35.5	10.348	6	2 16 10.84	2.1428	8 42 21.1	9.900
7	0 39 54.91	1.9732	0 38 56.7	10.357	7	2 18 19.55	2.1476	8 52 14.2	9.868
8	0 41 53.37	1.9756	0 49 18.4	10.366	8	2 20 28.56	2.1525	9 2 5.3	9.835
9	0 43 51.98	1.9780	0 59 40.6	10.373	9	2 22 37.86	2.1574	9 11 54.4	9.802
10	0 45 50.73	1.9905	1 10 3.2	10.380	10	2 24 47.45	2.1624	9 21 41.5	9.767
11	0 47 49.63	1.9930	1 20 26.3	10.387	11	2 26 57.24	2.1674	9 31 26.4	9.731
12	0 49 48.69	1.9956	1 30 49.7	10.393	12	2 29 7.53	2.1724	9 41 9.2	9.694
13	0 51 47.90	1.9982	1 41 13.4	10.398	13	2 31 18.03	2.1775	9 50 49.7	9.656
14	0 53 47.27	1.9999	1 51 37.4	10.403	14	2 33 28.63	2.1826	10 0 27.9	9.616
15	0 55 46.80	1.9936	2 2 1.7	10.408	15	2 35 39.94	2.1877	10 10 3.6	9.575
16	0 57 46.50	1.9964	2 12 26.1	10.409	16	2 37 51.35	2.1929	10 19 36.9	9.533
17	0 59 46.37	1.9992	2 22 50.7	10.410	17	2 40 3.08	2.1981	10 29 7.7	9.491
18	1 1 46.41	2.0021	2 33 15.3	10.411	18	2 42 15.12	2.2034	10 38 35.8	9.447
19	1 3 46.63	2.0051	2 43 40.0	10.412	19	2 44 27.48	2.2087	10 48 1.3	9.402
20	1 5 47.03	2.0082	2 54 4.8	10.412	20	2 46 40.16	2.2140	10 57 24.0	9.356
21	1 7 47.61	2.0113	3 4 29.5	10.411	21	2 48 53.16	2.2194	11 6 43.9	9.308
22	1 9 48.38	2.0144	3 14 54.1	10.409	22	2 51 6.48	2.2248	11 16 1.0	9.260
23	1 11 49.34	2.0176	3 25 18.6	10.407	23	2 53 20.13	2.2302	11 25 15.1	9.209
24	1 13 50.49	2.0208	N. 3 35 43.0	10.404	24	2 55 34.10	2.2356	N. 11 34 26.1	9.158

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
WEDNESDAY 17.					FRIDAY 19.				
0	2 55 34.10	2.2366	N.11° 34' 26.1"	9.166	0	4 49 20.49	2.5006	N.17° 31' 22.2"	6.223
1	2 57 48.40	2.2411	11 43 34.1	9.106	1	4 51 50.67	2.5064	17 36 32.2	6.111
2	3 0 3.03	2.2466	11 52 38.9	9.063	2	4 54 21.14	2.5102	17 41 35.5	4.998
3	3 2 17.99	2.2521	12 1 40.5	8.998	3	4 56 51.90	2.5160	17 46 32.0	4.863
4	3 4 33.28	2.2576	12 10 38.7	8.943	4	4 59 22.94	2.5197	17 51 21.5	4.767
5	3 6 48.90	2.2632	12 19 33.5	8.885	5	5 1 54.26	2.5243	17 56 4.0	4.660
6	3 9 4.86	2.2688	12 28 24.9	8.827	6	5 4 25.85	2.5298	18 0 39.5	4.532
7	3 11 21.16	2.2744	12 37 12.8	8.768	7	5 6 57.71	2.5332	18 5 7.8	4.413
8	3 13 37.79	2.2800	12 45 57.0	8.707	8	5 9 29.83	2.5376	18 9 29.0	4.293
9	3 15 54.77	2.2857	12 54 37.6	8.645	9	5 12 2.21	2.5418	18 13 43.0	4.172
10	3 18 12.08	2.2913	13 3 14.4	8.582	10	5 14 34.85	2.5460	18 17 49.6	4.049
11	3 20 29.73	2.2970	13 11 47.4	8.517	11	5 17 7.74	2.5502	18 21 48.9	3.926
12	3 22 47.72	2.3027	13 20 16.4	8.450	12	5 19 40.87	2.5542	18 25 40.7	3.802
13	3 25 6.05	2.3084	13 28 41.4	8.383	13	5 22 14.24	2.5582	18 29 25.0	3.677
14	3 27 24.73	2.3141	13 37 2.4	8.315	14	5 24 47.85	2.5620	18 33 1.9	3.551
15	3 29 43.74	2.3198	13 45 19.2	8.245	15	5 27 21.68	2.5658	18 36 31.2	3.425
16	3 32 3.10	2.3255	13 53 31.8	8.174	16	5 29 55.74	2.5696	18 39 52.9	3.297
17	3 34 22.80	2.3312	14 1 40.1	8.102	17	5 32 30.02	2.5731	18 43 6.9	3.168
18	3 36 42.85	2.3369	14 9 44.1	8.028	18	5 35 4.51	2.5766	18 46 13.1	3.039
19	3 39 3.24	2.3427	14 17 43.6	7.953	19	5 37 39.21	2.5801	18 49 11.6	2.909
20	3 41 23.97	2.3485	14 25 38.5	7.876	20	5 40 14.12	2.5834	18 52 2.2	2.778
21	3 43 45.05	2.3542	14 33 28.8	7.799	21	5 42 49.22	2.5866	18 54 44.9	2.646
22	3 46 6.47	2.3600	14 41 14.4	7.721	22	5 45 24.51	2.5899	18 57 19.7	2.514
23	3 48 28.23	2.3656	N.14 48 55.3	7.641	23	5 47 59.99	2.5927	N.18 59 46.6	2.381
THURSDAY 18.					SATURDAY 20.				
0	3 50 50.34	2.3713	N.14 56 31.3	7.560	0	5 50 35.64	2.5966	N.19 2 5.4	2.247
1	3 53 12.79	2.3770	15 4 2.4	7.477	1	5 53 11.46	2.5984	19 4 16.2	2.113
2	3 55 35.58	2.3827	15 11 28.5	7.393	2	5 55 47.45	2.6011	19 6 18.9	1.978
3	3 57 58.71	2.3883	15 18 49.5	7.308	3	5 58 23.60	2.6037	19 8 13.5	1.842
4	4 0 22.18	2.3940	15 26 5.4	7.221	4	6 0 59.90	2.6062	19 9 59.9	1.706
5	4 2 45.99	2.3996	15 33 16.1	7.133	5	6 3 36.35	2.6086	19 11 38.2	1.569
6	4 5 10.13	2.4052	15 40 21.4	7.044	6	6 6 12.93	2.6108	19 13 8.2	1.433
7	4 7 34.61	2.4108	15 47 21.3	6.953	7	6 8 49.65	2.6130	19 14 30.0	1.294
8	4 9 59.43	2.4164	15 54 15.8	6.861	8	6 11 26.49	2.6150	19 15 43.5	1.156
9	4 12 24.58	2.4220	16 1 4.7	6.768	9	6 14 3.45	2.6170	19 16 48.7	1.017
10	4 14 50.07	2.4276	16 7 48.0	6.674	10	6 16 40.53	2.6188	19 17 45.6	0.878
11	4 17 15.88	2.4332	16 14 25.6	6.579	11	6 19 17.71	2.6206	19 18 34.1	0.736
12	4 19 42.02	2.4388	16 20 57.5	6.483	12	6 21 54.99	2.6221	19 19 14.2	0.596
13	4 22 8.49	2.4443	16 27 23.5	6.383	13	6 24 32.36	2.6236	19 19 45.9	0.456
14	4 24 35.28	2.4499	16 33 43.5	6.284	14	6 27 9.82	2.6250	19 20 9.2	0.318
15	4 27 2.40	2.4554	16 39 57.6	6.184	15	6 29 47.35	2.6261	19 20 24.1	0.178
16	4 29 29.83	2.4609	16 46 5.6	6.082	16	6 32 24.95	2.6273	19 20 30.6	0.038
17	4 31 57.58	2.4663	16 52 7.5	5.979	17	6 35 2.61	2.6282	19 20 28.6	0.103
18	4 34 25.65	2.4704	16 58 3.1	5.875	18	6 37 40.33	2.6290	19 20 18.2	0.244
19	4 36 54.03	2.4766	17 3 52.4	5.769	19	6 40 18.10	2.6298	19 19 59.3	0.388
20	4 39 22.72	2.4808	17 9 35.4	5.663	20	6 42 55.91	2.6304	19 19 31.9	0.527
21	4 41 51.71	2.4858	17 15 12.0	5.555	21	6 45 33.75	2.6309	19 18 56.0	0.668
22	4 44 21.01	2.4908	17 20 42.0	5.446	22	6 48 11.62	2.6313	19 18 11.7	0.809
23	4 46 50.60	2.4957	17 26 5.4	5.335	23	6 50 49.51	2.6316	19 17 18.9	0.950
24	4 49 20.49	2.5006	N.17 31 22.2	5.223	24	6 53 27.41	2.6317	N.19 16 17.7	1.092

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SUNDAY 21.					TUESDAY 23.				
0	6 53 27.41	2.6317	N.19° 16' 17.7"	1.0923	0	8 57 52.66	2.5171	N.15° 49' 32.8"	7.226
1	6 56 5.32	2.6318	19 15 8.0	1.283	1	9 0 23.56	2.5198	15 42 16.1	7.380
2	6 58 43.23	2.6317	19 13 49.8	1.374	2	9 2 54.20	2.5086	15 34 53.2	7.433
3	7 1 21.13	2.6316	19 12 23.1	1.416	3	9 5 24.58	2.5042	15 27 24.1	7.535
4	7 3 59.01	2.6311	19 10 48.0	1.466	4	9 7 54.70	2.4998	15 19 49.0	7.686
5	7 6 36.87	2.6307	19 9 4.5	1.798	5	9 10 24.55	2.4983	15 12 7.9	7.784
6	7 9 14.69	2.6301	19 7 12.5	1.986	6	9 12 54.14	2.4909	15 4 20.9	7.882
7	7 11 52.48	2.6295	19 5 12.1	2.076	7	9 15 23.46	2.4864	14 56 28.0	7.929
8	7 14 30.23	2.6287	19 3 3.4	2.316	8	9 17 52.51	2.4819	14 48 29.4	8.024
9	7 17 7.92	2.6278	19 0 46.3	2.366	9	9 20 21.29	2.4773	14 40 25.1	8.118
10	7 19 45.56	2.6267	18 58 20.8	2.494	10	9 22 49.79	2.4737	14 32 15.2	8.211
11	7 22 23.14	2.6256	18 55 47.0	2.622	11	9 25 18.01	2.4681	14 23 59.8	8.302
12	7 25 0.64	2.6243	18 53 5.0	2.770	12	9 27 45.96	2.4636	14 15 39.0	8.392
13	7 27 38.06	2.6230	18 50 14.7	2.908	13	9 30 13.63	2.4588	14 7 12.8	8.480
14	7 30 15.40	2.6216	18 47 16.1	3.046	14	9 32 41.02	2.4542	13 58 41.4	8.567
15	7 32 52.65	2.6200	18 44 9.3	3.182	15	9 35 8.13	2.4496	13 50 4.8	8.653
16	7 35 29.80	2.6183	18 40 54.3	3.318	16	9 37 34.96	2.4448	13 41 23.0	8.738
17	7 38 6.84	2.6164	18 37 31.2	3.463	17	9 40 1.51	2.4401	13 32 36.2	8.821
18	7 40 43.77	2.6145	18 33 59.9	3.598	18	9 42 27.77	2.4354	13 23 44.5	8.908
19	7 43 20.59	2.6126	18 30 20.6	3.722	19	9 44 53.75	2.4307	13 14 47.9	8.988
20	7 45 57.28	2.6105	18 26 33.3	3.856	20	9 47 19.45	2.4260	13 5 46.6	9.062
21	7 48 33.84	2.6083	18 22 38.0	3.988	21	9 49 44.86	2.4212	12 56 40.5	9.136
22	7 51 10.27	2.6060	18 18 34.7	4.120	22	9 52 9.99	2.4166	12 47 29.9	9.214
23	7 53 46.55	2.6036	N.18° 14' 23.5"	4.262	23	9 54 34.84	2.4117	N.12° 38' 14.8"	9.289
MONDAY 22.					WEDNESDAY 24.				
0	7 56 22.69	2.6010	N.18° 10' 4.4"	4.393	0	9 56 59.40	2.4089	N.12° 28' 55.2"	9.363
1	7 58 58.67	2.5984	18 5 37.5	4.518	1	9 59 23.67	2.4023	12 19 31.2	9.436
2	8 1 34.50	2.5967	18 1 2.9	4.641	2	10 1 47.66	2.3975	12 10 3.0	9.505
3	8 4 10.17	2.5930	17 56 20.6	4.769	3	10 4 11.37	2.3928	12 0 30.6	9.574
4	8 6 45.66	2.5901	17 51 30.6	4.896	4	10 6 34.79	2.3880	11 50 54.1	9.642
5	8 9 20.97	2.5871	17 46 33.0	5.023	5	10 8 57.93	2.3832	11 41 13.5	9.709
6	8 11 56.11	2.5841	17 41 27.8	5.149	6	10 11 20.79	2.3786	11 31 29.0	9.774
7	8 14 31.07	2.5810	17 36 15.2	5.273	7	10 13 43.37	2.3739	11 21 40.6	9.837
8	8 17 5.83	2.5778	17 30 55.1	5.396	8	10 16 5.66	2.3692	11 11 48.5	9.899
9	8 19 40.40	2.5745	17 25 27.6	5.519	9	10 18 27.67	2.3646	11 1 52.7	9.960
10	8 22 14.77	2.5711	17 19 52.8	5.641	10	10 20 49.41	2.3599	10 51 53.3	10.020
11	8 24 48.94	2.5677	17 14 10.7	5.761	11	10 23 10.87	2.3553	10 41 50.3	10.078
12	8 27 22.89	2.5643	17 8 21.5	5.880	12	10 25 32.05	2.3507	10 31 43.9	10.136
13	8 29 56.63	2.5606	17 2 25.1	5.999	13	10 27 52.95	2.3461	10 21 34.1	10.194
14	8 32 30.16	2.5569	16 56 21.6	6.117	14	10 30 13.58	2.3416	10 11 21.1	10.244
15	8 35 3.46	2.5532	16 50 11.1	6.233	15	10 32 33.94	2.3370	10 1 4.9	10.297
16	8 37 36.54	2.5494	16 43 53.7	6.348	16	10 34 54.02	2.3326	9 50 45.5	10.348
17	8 40 9.39	2.5466	16 37 29.4	6.463	17	10 37 13.83	2.3280	9 40 23.1	10.398
18	8 42 42.01	2.5417	16 30 58.3	6.576	18	10 39 33.38	2.3236	9 29 57.7	10.447
19	8 45 14.40	2.5378	16 24 20.4	6.687	19	10 41 52.66	2.3191	9 19 29.4	10.494
20	8 47 46.54	2.5338	16 17 35.9	6.797	20	10 44 11.67	2.3147	9 8 58.4	10.539
21	8 50 18.44	2.5297	16 10 44.8	6.906	21	10 46 30.42	2.3103	8 58 24.7	10.584
22	8 52 50.10	2.5256	16 3 47.2	7.013	22	10 48 48.91	2.3060	8 47 48.3	10.628
23	8 55 21.51	2.5213	15 56 43.2	7.120	23	10 51 7.14	2.3017	8 37 9.3	10.670
24	8 57 52.66	2.5171	N.15° 49' 32.8"	7.226	24	10 53 25.11	2.2974	N. 8° 26' 27.9"	10.711

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
THURSDAY 25.					SATURDAY 27.				
0	^h 10 ^m 53 ^s 25.11	2.2974	N. 8° 26' 27.9"	10.711	0	^h 12 ^m 89 ^s 33.94	2.1498	S. 0° 31' 22.7"	11.907
1	10 55 42.83	2.2982	8 15 44.1	10.780	1	12 41 42.51	2.1418	0 42 38.3	11.233
2	10 58 0.29	2.2980	8 4 57.9	10.788	2	12 43 50.96	2.1399	0 53 53.0	11.228
3	11 0 17.50	2.2948	7 54 9.5	10.826	3	12 45 59.30	2.1381	1 5 6.8	11.222
4	11 2 34.46	2.2986	7 43 18.9	10.861	4	12 48 7.53	2.1363	1 16 19.6	11.204
5	11 4 51.17	2.2785	7 32 26.2	10.895	5	12 50 15.65	2.1345	1 27 31.3	11.186
6	11 7 7.64	2.2754	7 21 31.5	10.927	6	12 52 23.67	2.1328	1 38 41.9	11.167
7	11 9 23.86	2.2654	7 10 34.9	10.959	7	12 54 31.58	2.1311	1 49 51.4	11.147
8	11 11 39.85	2.2644	6 59 36.4	10.990	8	12 56 39.40	2.1295	2 0 59.6	11.126
9	11 13 55.60	2.2605	6 48 36.1	11.019	9	12 58 47.12	2.1279	2 12 6.6	11.105
10	11 16 11.11	2.2605	6 37 34.1	11.047	10	13 0 54.75	2.1264	2 23 12.2	11.088
11	11 18 26.39	2.2626	6 26 30.5	11.073	11	13 3 2.28	2.1249	2 34 16.5	11.069
12	11 20 41.44	2.2680	6 15 25.3	11.098	12	13 5 9.73	2.1235	2 45 19.3	11.044
13	11 22 56.26	2.2682	6 4 18.6	11.128	13	13 7 17.10	2.1221	2 56 20.6	11.020
14	11 25 10.86	2.2615	5 53 10.5	11.147	14	13 9 24.38	2.1207	3 7 20.4	10.993
15	11 27 25.23	2.2578	5 42 1.0	11.169	15	13 11 31.58	2.1194	3 18 18.6	10.966
16	11 29 39.39	2.2543	5 30 50.2	11.190	16	13 13 38.71	2.1182	3 29 15.1	10.938
17	11 31 53.23	2.2505	5 19 38.2	11.209	17	13 15 45.76	2.1170	3 40 9.9	10.909
18	11 34 7.06	2.2370	5 8 25.1	11.227	18	13 17 52.75	2.1159	3 51 3.0	10.879
19	11 36 20.57	2.2235	4 57 10.9	11.244	19	13 19 59.67	2.1148	4 1 54.3	10.848
20	11 38 33.88	2.2201	4 45 55.8	11.260	20	13 22 6.52	2.1137	4 12 43.8	10.820
21	11 40 46.98	2.2167	4 34 39.7	11.275	21	13 24 13.31	2.1127	4 23 31.4	10.777
22	11 42 59.88	2.2133	4 23 22.8	11.289	22	13 26 20.05	2.1117	4 34 17.0	10.744
23	11 45 12.58	2.2100	N. 4 12 5.1	11.301	23	13 28 26.73	2.1108	S. 4 45 0.6	10.710
FRIDAY 26.					SUNDAY 28.				
0	11 47 25.08	2.2067	N. 4 0 46.7	11.313	0	13 30 33.25	2.1100	S. 4 55 42.2	10.676
1	11 49 37.39	2.2036	3 49 27.6	11.323	1	13 32 39.93	2.1082	5 6 21.7	10.641
2	11 51 49.50	2.2004	3 38 7.9	11.332	2	13 34 46.46	2.1064	5 16 59.1	10.605
3	11 54 1.43	2.1973	3 26 47.7	11.340	3	13 36 52.94	2.1077	5 27 34.3	10.568
4	11 56 13.17	2.1943	3 15 27.1	11.347	4	13 38 59.38	2.1070	5 38 7.3	10.530
5	11 58 24.73	2.1913	3 4 6.1	11.353	5	13 41 5.78	2.1063	5 48 38.0	10.493
6	12 0 36.12	2.1883	2 52 44.7	11.359	6	13 43 12.14	2.1057	5 59 6.3	10.455
7	12 2 47.33	2.1854	2 41 23.1	11.362	7	13 45 18.47	2.1052	6 9 32.3	10.418
8	12 4 58.36	2.1825	2 30 1.3	11.365	8	13 47 24.76	2.1047	6 19 55.8	10.373
9	12 7 9.23	2.1795	2 18 39.4	11.369	9	13 49 31.02	2.1042	6 30 16.9	10.331
10	12 9 19.93	2.1770	2 7 17.4	11.369	10	13 51 37.26	2.1037	6 40 35.5	10.289
11	12 11 30.46	2.1743	1 55 55.4	11.366	11	13 53 43.47	2.1032	6 50 51.5	10.248
12	12 13 40.84	2.1716	1 44 33.5	11.365	12	13 55 49.66	2.1027	7 1 5.0	10.209
13	12 15 51.06	2.1690	1 33 11.7	11.363	13	13 57 55.83	2.1027	7 11 15.8	10.168
14	12 18 1.12	2.1664	1 21 50.1	11.359	14	14 0 1.98	2.1024	7 21 23.9	10.113
15	12 20 11.03	2.1639	1 10 28.7	11.354	15	14 2 8.11	2.1021	7 31 29.2	10.067
16	12 22 20.79	2.1615	0 59 7.6	11.349	16	14 4 14.23	2.1019	7 41 31.9	10.020
17	12 24 30.41	2.1591	0 47 46.9	11.343	17	14 6 20.33	2.1017	7 51 31.7	9.973
18	12 26 39.89	2.1568	0 36 26.6	11.334	18	14 8 26.43	2.1016	8 1 28.6	9.924
19	12 28 49.23	2.1545	0 25 6.8	11.325	19	14 10 32.52	2.1015	8 11 22.6	9.875
20	12 30 58.43	2.1523	0 13 47.6	11.316	20	14 12 38.61	2.1014	8 21 13.6	9.826
21	12 33 7.50	2.1501	N. 0 2 29.0	11.305	21	14 14 44.70	2.1014	8 31 1.7	9.776
22	12 35 16.44	2.1479	S. 0 8 49.0	11.294	22	14 16 50.78	2.1014	8 40 46.7	9.726
23	12 37 25.25	2.1458	0 20 6.2	11.281	23	14 18 56.86	2.1014	8 50 28.6	9.673
24	12 39 33.94	2.1438	S. 0 31 22.7	11.267	24	14 21 2.95	2.1015	S. 9 0 7.5	9.621

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
MONDAY 29.					TUESDAY 30.				
0	14 21 2.95	2.1015	S. 9° 0' 7.5	9.221	0	15 11 34.38	2.1111	S. 12° 34' 20.6	8.189
1	14 23 9.04	2.1016	9 9 43.2	9.598	1	15 13 41.07	2.1118	12 42 28.7	8.101
2	14 25 15.14	2.1017	9 19 15.7	9.514	2	15 15 47.79	2.1124	12 50 32.7	8.032
3	14 27 21.25	2.1019	9 28 44.9	9.460	3	15 17 54.56	2.1131	12 58 32.6	7.963
4	14 29 27.37	2.1021	9 38 10.9	9.405	4	15 20 1.37	2.1138	13 6 28.3	7.893
5	14 31 33.50	2.1022	9 47 33.5	9.349	5	15 22 8.22	2.1144	13 14 19.8	7.822
6	14 33 39.64	2.1023	9 56 52.8	9.293	6	15 24 15.11	2.1152	13 22 7.0	7.752
7	14 35 45.80	2.1023	10 6 8.7	9.236	7	15 26 22.05	2.1160	13 29 50.0	7.681
8	14 37 51.98	2.1031	10 15 21.1	9.178	8	15 28 29.03	2.1167	13 37 28.7	7.609
9	14 39 58.18	2.1035	10 24 30.1	9.120	9	15 30 36.06	2.1174	13 45 3.0	7.536
10	14 42 4.40	2.1036	10 33 35.5	9.061	10	15 32 43.13	2.1182	13 52 33.0	7.463
11	14 44 10.64	2.1042	10 42 37.3	9.001	11	15 34 50.25	2.1190	13 59 58.5	7.389
12	14 46 16.90	2.1046	10 51 35.6	8.941	12	15 36 57.41	2.1196	14 7 19.6	7.315
13	14 48 23.19	2.1050	11 0 30.2	8.880	13	15 39 4.62	2.1206	14 14 36.3	7.240
14	14 50 29.50	2.1054	11 9 21.2	8.818	14	15 41 11.88	2.1213	14 21 48.4	7.164
15	14 52 35.84	2.1059	11 18 8.4	8.756	15	15 43 19.18	2.1221	14 28 56.0	7.088
16	14 54 42.21	2.1064	11 26 51.9	8.693	16	15 45 26.53	2.1229	14 35 59.0	7.012
17	14 56 48.61	2.1069	11 35 31.6	8.630	17	15 47 33.92	2.1237	14 42 57.4	6.935
18	14 58 55.04	2.1075	11 44 7.5	8.566	18	15 49 41.37	2.1245	14 49 51.2	6.858
19	15 1 1.51	2.1081	11 52 39.5	8.502	19	15 51 48.87	2.1253	14 56 40.4	6.781
20	15 3 8.01	2.1087	12 1 7.7	8.437	20	15 53 56.41	2.1261	15 3 24.9	6.703
21	15 5 14.55	2.1093	12 9 31.9	8.371	21	15 56 4.00	2.1269	15 10 4.7	6.624
22	15 7 21.12	2.1099	12 17 52.2	8.304	22	15 58 11.64	2.1277	15 16 39.7	6.545
23	15 9 27.73	2.1106	12 26 8.4	8.237	23	16 0 19.33	2.1285	15 23 10.0	6.465
24	15 11 34.38	2.1111	S. 12° 34' 20.6	8.169	24	16 2 27.06	2.1293	S. 15° 29' 35.5	6.384

PHASES OF THE MOON.

○ Full Moon,	d	h	m
☾ Last Quarter,	12	23	13.6
● New Moon,	20	2	45.2
☾ First Quarter,	26	17	50.6

☾ Apogee,	d	h
☾ Perigee,	9	16.8
	21	18.1

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	Pollux W.	93° 51' 33"	2633	95° 29' 45"	2640	97° 7' 45"	2649	98° 45' 35"	2659
	Venus W.	91 59 37	2611	93 33 51	2619	95 7 54	2627	96 41 47	2635
	Regulus W.	57 50 31	2568	59 30 10	2577	61 9 37	2585	62 48 52	2593
	Saturn E.	35 57 13	2561	34 17 24	2571	32 37 49	2582	30 58 29	2593
	Antares E.	43 0 11	2704	41 23 37	2722	39 47 26	2741	38 11 40	2760
	α Aquilæ E.	91 33 6	3049	90 4 6	3067	88 35 16	3076	87 6 37	3087
2	Venus W.	104 28 34	2876	106 1 24	2884	107 34 3	2898	109 6 31	2901
	Regulus W.	71 2 14	2637	72 40 19	2645	74 18 13	2644	75 55 55	2663
	Spica W.	18 16 45	2672	19 49 40	2648	21 23 5	2630	22 56 54	2616
	α Aquilæ E.	79 46 49	3148	78 19 37	3163	76 52 44	3179	75 26 10	3196
	Fomalhaut E.	113 7 52	2983	111 37 18	2964	110 6 45	2956	108 36 14	2936
3	Regulus W.	84 1 29	2706	85 38 1	2715	87 14 21	2734	88 50 29	2753
	Spica W.	30 48 53	2795	32 23 27	2796	33 58 0	2799	35 32 29	2802
	α Aquilæ E.	68 18 36	3294	66 54 17	3317	65 30 25	3342	64 7 2	3367
	Fomalhaut E.	101 4 39	3069	99 34 37	3016	96 4 43	3022	96 34 57	3028
	α Pegasi E.	115 48 43	3065	114 20 15	3084	112 51 46	3065	111 23 18	3066
4	Regulus W.	96 48 13	2777	98 23 11	2786	99 57 57	2796	101 32 32	2804
	Spica W.	43 23 35	2827	44 57 28	2838	46 31 13	2840	48 4 49	2847
	α Aquilæ E.	57 18 6	3224	55 58 8	3261	54 38 51	3261	53 20 18	3244
	Fomalhaut E.	89 8 23	3069	87 39 36	3079	86 11 1	3069	84 42 38	3099
	α Pegasi E.	104 1 35	3103	102 33 29	3107	101 5 28	3112	99 37 33	3118
5	Spica W.	55 50 34	2883	57 23 15	2891	58 55 46	2896	60 28 7	2906
	Saturn W.	16 13 36	2889	17 46 9	2898	19 18 43	2899	20 51 16	2891
	α Aquilæ E.	47 0 7	3212	45 46 59	3279	44 34 59	4063	43 24 11	4123
	Fomalhaut E.	77 23 59	3167	75 56 58	3170	74 30 13	3183	73 3 44	3197
	α Pegasi E.	92 19 59	3154	90 52 55	3163	89 26 2	3173	87 59 20	3182
	Jupiter E.	111 38 32	2907	110 6 22	2916	108 34 23	2926	107 2 36	2933
6	Spica W.	68 7 28	2944	69 38 51	2962	71 10 4	2969	72 41 8	2996
	Saturn W.	28 32 57	2915	30 4 57	2920	31 36 50	2927	33 8 35	2933
	Antares W.	23 39 20	3295	25 3 37	3264	26 28 31	3238	27 53 55	3217
	Fomalhaut E.	65 55 36	3274	64 30 54	3291	63 6 32	3310	61 42 32	3329
	α Pegasi E.	80 48 44	3233	79 23 14	3245	77 57 58	3267	76 32 56	3299
	Jupiter E.	99 26 19	2975	97 55 35	2963	96 25 1	2992	94 54 38	2999
7	Spica W.	80 14 11	3061	81 44 22	3069	83 14 24	3016	84 44 17	3023
	Saturn W.	40 45 19	2965	42 16 16	2971	43 47 5	2977	45 17 46	2983
	Antares W.	35 5 53	3156	36 32 53	3163	37 59 59	3148	39 27 10	3146
	Fomalhaut E.	54 48 16	3457	53 26 41	3463	52 5 35	3488	50 44 58	3517
	α Pegasi E.	69 31 25	3335	68 7 54	3390	66 44 40	3363	65 21 44	3361
	Jupiter E.	87 25 4	3037	85 55 37	3043	84 26 18	3066	82 57 7	3067
	α Arietis E.	112 36 57	3144	111 9 41	3148	109 42 29	3161	108 15 21	3155
8	Spica W.	92 11 48	3063	93 40 57	3067	95 9 59	3093	96 38 55	3068
	Saturn W.	52 49 26	3010	54 19 26	3015	55 49 20	3019	57 19 9	3024
	Antares W.	46 43 44	3139	48 11 6	3139	49 38 28	3139	51 5 50	3140
	Fomalhaut E.	44 10 26	3692	42 53 30	3735	41 37 20	3793	40 21 59	3834
	α Pegasi E.	58 31 46	3471	57 10 49	3480	55 50 14	3611	54 30 2	3636
	Jupiter E.	75 33 11	3066	74 4 44	3091	72 36 24	3096	71 8 10	3101
	α Arietis E.	101 0 52	3175	99 34 13	3178	98 7 38	3182	96 41 7	3196
	Mars E.	109 21 31	3315	107 57 37	3320	106 33 49	3325	105 10 7	3330

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Dist.	XVh.	P. L. of Dist.	XVIIIh.	P. L. of Dist.	XXIh.	P. L. of Dist.
1	Pollux W.	100° 23' 8"	2888	102° 0' 31"	2877	103° 37' 42"	2887	105° 14' 40"	2886
	Venus W.	98 15 29	2848	99 49 1	2861	101 22 23	2869	102 55 34	2868
	Regulus W.	64 27 56	2802	66 6 48	2811	67 45 28	2819	69 23 57	2828
	Saturn E.	29 19 24	2804	27 40 34	2815	26 1 59	2826	24 23 39	2838
	Antares E.	36 36 20	2792	35 1 29	2807	33 27 10	2834	31 53 26	2862
	α Aquilæ E.	85 38 11	2808	84 9 59	3110	82 42 1	3121	81 14 17	3134
2	Venus W.	110 38 49	2800	112 10 56	2818	113 42 52	2827	115 14 37	2835
	Regulus W.	77 33 25	2872	79 10 43	2880	80 47 50	2889	82 24 45	2897
	Spica W.	24 31 1	2807	26 5 20	2801	27 39 47	2797	29 14 19	2796
	α Aquilæ E.	73 59 55	3213	72 34 1	3231	71 8 29	3261	69 43 20	3272
	Fomalhaut E.	107 5 46	2890	105 35 21	2894	104 5 1	2899	102 34 47	3004
3	Regulus W.	90 26 25	2743	92 2 9	2750	93 37 42	2760	95 13 3	2768
	Spica W.	37 6 54	2806	38 41 14	2811	40 15 28	2816	41 49 35	2821
	α Aquilæ E.	62 44 8	3200	61 21 46	3434	59 59 57	3465	58 38 43	3488
	Fomalhaut E.	95 5 19	3035	93 35 50	3043	92 6 31	3062	90 37 22	3080
	α Pegasi E.	109 54 51	3087	108 26 26	3098	106 58 4	3094	105 29 47	3098
4	Regulus W.	103 6 55	2813	104 41 6	2821	106 15 6	2831	107 48 54	2838
	Spica W.	49 38 16	2854	51 11 34	2861	52 44 43	2868	54 17 43	2875
	α Aquilæ E.	52 2 31	3080	50 45 33	3740	49 29 28	3792	48 14 18	3840
	Fomalhaut E.	83 14 27	3110	81 46 29	3121	80 18 45	3133	78 51 15	3144
	α Pegasi E.	98 9 45	3124	96 42 5	3133	95 14 34	3139	93 47 12	3147
5	Spica W.	62 0 19	2813	63 32 21	2821	65 4 13	2829	66 35 55	2836
	Saturn W.	22 23 47	2884	23 56 14	2888	25 28 35	2893	27 0 50	2899
	α Aquilæ E.	42 14 40	4319	41 6 32	4314	39 59 52	4419	38 54 48	4434
	Fomalhaut E.	71 37 31	3211	70 11 35	3226	68 45 57	3242	67 20 37	3256
	α Pegasi E.	86 32 49	3192	85 6 30	3202	83 40 23	3211	82 14 27	3222
	Jupiter E.	105 30 59	3242	103 59 33	3260	102 28 18	3268	100 57 13	3267
6	Spica W.	74 12 3	2874	75 42 48	2881	77 13 24	2888	78 43 52	2895
	Saturn W.	34 40 12	2839	36 11 41	2846	37 43 2	2853	39 14 14	2866
	Antares W.	29 19 44	3199	30 45 54	3185	32 12 21	3173	33 39 2	3165
	Fomalhaut E.	60 18 54	3248	58 55 38	3269	57 32 46	3290	56 10 18	3413
	α Pegasi E.	75 8 8	3281	73 43 34	3294	72 19 15	3307	70 55 12	3321
	Jupiter E.	93 24 24	3007	91 54 20	3014	90 24 25	3022	88 54 40	3030
7	Spica W.	86 14 2	3029	87 43 39	3034	89 13 9	3040	90 42 32	3046
	Saturn W.	46 48 20	3089	48 18 47	3084	49 49 7	3090	51 19 20	3095
	Antares W.	40 54 24	3143	42 21 41	3141	43 49 1	3140	45 16 22	3139
	Fomalhaut E.	49 24 53	3247	48 5 21	3279	46 46 24	3214	45 28 5	3261
	α Pegasi E.	63 59 6	3297	62 36 46	3414	61 14 45	3432	59 53 5	3451
	Jupiter E.	81 28 5	3064	79 59 11	3069	78 30 24	3075	77 1 44	3081
8	α Arietis E.	106 48 18	3168	105 21 19	3163	103 54 25	3167	102 27 36	3171
	Spica W.	98 7 46	3070	99 36 32	3078	101 5 12	3079	102 33 47	3082
	Saturn W.	58 48 52	3028	60 18 30	3032	61 48 3	3035	63 17 32	3039
	Antares W.	52 33 11	3140	54 0 32	3141	55 27 52	3142	56 55 11	3142
	Fomalhaut E.	39 7 32	3292	37 54 4	3264	36 41 39	4023	35 30 22	4100
	α Pegasi E.	53 10 16	3259	51 50 57	3284	50 32 5	3210	49 13 42	3240
	Jupiter E.	69 40 2	3106	68 11 59	3110	66 44 1	3113	65 16 7	3116
	α Arietis E.	95 14 41	3189	93 48 19	3193	92 22 2	3197	90 55 49	3200
	Mars E.	103 46 30	3334	102 22 58	3338	100 59 31	3343	99 36 9	3346

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of DIST.	IIIh.	P. L. of DIST.	VIh.	P. L. of DIST.	IXh.	P. L. of DIST.
9	Spica W.	104° 2' 18"	3088	105° 30' 45"	3088	106° 59' 8"	3092	108° 27' 27"	3095
	Saturn W.	64 46 57	3043	66 16 18	3044	67 45 36	3047	69 14 51	3047
	Antares W.	58 22 30	3143	59 49 48	3143	61 17 6	3143	62 44 24	3143
	α Pegasi E.	47 53 51	3071	46 38 33	3708	45 21 51	3741	44 5 47	3781
	Jupiter E.	63 48 17	3119	62 20 31	3192	60 52 48	3125	59 25 9	3197
	α Arietis E.	89 29 40	3208	88 8 34	3208	86 37 32	3209	86 11 33	3212
	Mars E.	96 12 51	3249	96 49 36	3261	95 26 24	3254	94 3 15	3267
	SUN E.	132 50 1	3454	131 28 45	3455	130 7 31	3456	128 46 18	3456
10	Saturn W.	76 40 44	3052	78 9 59	3052	79 39 0	3051	81 8 10	3049
	Antares W.	70 0 59	3130	71 28 21	3130	72 55 45	3136	74 23 11	3134
	α Aquilæ W.	33 5 58	3437	33 57 12	3773	34 50 40	3107	35 46 12	4061
	Jupiter E.	52 7 20	3131	50 39 48	3131	49 12 16	3131	47 44 44	3130
	α Arietis E.	78 2 22	3223	76 36 39	3224	75 10 58	3226	73 45 18	3226
	Mars E.	87 7 58	3261	85 44 57	3269	84 21 55	3269	82 58 53	3269
	SUN E.	122 0 27	3455	120 39 16	3457	119 18 4	3456	117 56 51	3454
11	Saturn W.	88 34 31	3089	90 3 56	3084	91 33 26	3090	93 3 2	3028
	Antares W.	81 41 6	3118	83 8 54	3114	84 36 46	3110	86 4 43	3106
	α Aquilæ W.	40 49 52	4416	41 54 59	4386	43 1 19	4261	44 8 48	4299
	Jupiter E.	40 26 36	3119	38 58 49	3116	37 30 58	3118	36 3 3	3108
	α Arietis E.	66 37 19	3261	65 11 46	3281	63 46 13	3231	62 20 41	3231
	Mars E.	76 3 13	3246	74 39 55	3243	73 16 33	3236	71 53 6	3234
	SUN E.	111 10 6	3430	109 48 34	3435	108 26 57	3430	107 5 14	3434
12	Saturn W.	100 32 36	3077	102 2 53	3080	103 33 20	3081	105 3 56	3073
	Antares W.	93 26 7	3076	94 54 47	3080	96 23 35	3061	97 52 32	3064
	α Aquilæ W.	50 1 7	3917	51 14 10	3971	52 27 59	3930	53 42 30	3790
	Jupiter E.	28 42 3	3092	27 13 31	3076	25 44 52	3069	24 16 5	3064
	α Arietis E.	55 13 9	3288	53 47 41	3296	52 22 15	3236	50 56 51	3240
	Mars E.	64 54 19	3293	63 30 11	3296	62 5 55	3269	60 41 30	3280
	SUN E.	100 14 59	3900	98 52 31	3282	97 29 54	3274	96 7 8	3265
13	α Aquilæ W.	60 4 53	3918	61 23 8	3967	62 41 56	3906	64 1 16	3829
	α Arietis E.	43 50 44	3263	42 25 49	3271	41 1 4	3268	39 36 31	3294
	Mars E.	53 36 48	3281	52 11 16	3291	50 45 32	3210	49 19 35	3198
	SUN E.	89 10 29	3212	87 46 31	3260	86 22 20	3260	84 57 55	3276
14	α Aquilæ W.	70 45 29	3400	72 7 45	3377	73 30 28	3254	74 53 37	3223
	Fomalhaut W.	37 27 30	3708	36 44 9	3687	40 2 3	3573	41 21 8	3611
	α Arietis E.	32 38 34	3408	31 16 27	3448	29 55 5	3495	28 34 36	3561
	Mars E.	42 6 17	3138	40 38 53	3124	39 11 12	3176	37 43 15	3097
	SUN E.	77 51 55	3206	76 25 53	3190	74 59 32	3175	73 32 53	3160
15	α Aquilæ W.	81 55 44	3286	83 21 23	3206	84 47 25	3188	86 13 49	3168
	Fomalhaut W.	48 12 4	3299	49 37 0	3220	51 2 45	3181	52 29 17	3143
	α Pegasi W.	35 9 9	3791	36 24 21	3695	37 41 13	3600	38 59 38	3629
	Mars E.	30 19 32	3083	28 50 0	3022	27 20 14	3018	25 50 14	3001
	SUN E.	66 14 46	3076	64 46 7	3040	63 17 7	3041	61 47 45	3023
16	α Aquilæ W.	93 31 16	3083	94 59 46	3089	96 28 34	3054	97 57 40	3040
	Fomalhaut W.	59 52 46	2976	61 23 29	2945	62 54 49	3016	64 26 45	2980
	α Pegasi W.	45 51 37	3216	47 17 28	3168	48 44 18	3119	50 12 5	3073
	Jupiter W.	20 54 8	3686	22 31 49	3625	24 9 57	3614	25 48 33	3603
	SUN E.	54 15 20	2992	52 43 42	2914	51 11 41	2896	49 39 17	2876

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Dist.	XVth.	P. L. of Dist.	XVIIIth.	P. L. of Dist.	XXth.	P. L. of Dist.
9	Spica W.	109° 55' 43"	2007	111° 23' 56"	2008	112° 52' 8"	2100	114° 20' 18"	2101
	Saturn W.	70 44 5	2009	72 13 17	2061	73 42 27	2062	75 11 36	2062
	Antares W.	64 11 42	2143	65 39 0	2142	67 6 19	2142	68 33 38	2140
	α Pegasi E.	42 50 25	2022	41 35 47	2070	40 21 57	2021	39 8 59	2077
	Jupiter E.	57 57 32	2120	56 29 57	2130	55 2 24	2131	53 34 52	2131
	α Arietis E.	83 45 38	2014	82 19 45	2216	80 53 55	2218	79 28 7	2220
	Mars E.	92 40 9	2200	91 17 4	2200	89 54 1	2300	88 30 59	2301
	SUN E.	127 25 7	2400	126 3 57	2400	124 42 47	2400	123 21 37	2400
10	Saturn W.	82 37 22	2047	84 6 36	2046	85 35 52	2044	87 5 10	2042
	Antares W.	75 50 39	2122	77 18 10	2120	78 45 45	2120	80 13 23	2122
	α Aquilæ W.	36 43 38	2028	37 42 51	2110	38 43 42	2028	39 46 4	2028
	Jupiter E.	46 17 11	2120	44 49 30	2127	43 21 59	2124	41 54 19	2122
	α Arietis E.	72 19 40	2200	70 54 4	2200	69 26 28	2200	68 2 53	2200
	Mars E.	81 35 50	2200	80 12 45	2200	78 49 37	2300	77 26 27	2300
	SUN E.	116 35 36	2402	115 14 18	2400	113 52 57	2400	112 31 33	2404
11	Saturn W.	94 32 44	2020	96 2 32	2016	97 32 26	2000	99 2 27	2003
	Antares W.	87 32 46	2102	89 0 55	2008	90 29 11	2008	91 57 35	2002
	α Aquilæ W.	45 17 22	2120	46 26 56	2070	47 37 27	2016	48 48 52	2064
	Jupiter E.	34 35 3	2104	33 6 58	2006	31 36 46	2000	30 10 28	2007
	α Arietis E.	60 55 9	2202	59 29 38	2200	58 4 8	2200	56 38 38	2204
	Mars E.	70 29 34	2200	69 5 56	2200	67 42 11	2317	66 18 19	2310
	SUN E.	105 43 25	2419	104 21 30	2413	102 59 28	2406	101 37 18	2306
12	Saturn W.	106 34 42	2000	108 5 39	2000	109 36 47	2046	111 8 7	2006
	Antares W.	99 21 38	2042	100 50 55	2000	102 20 23	2077	103 50 2	2016
	α Aquilæ W.	54 57 43	2102	56 13 35	2100	57 30 5	2001	58 47 12	2049
	Jupiter E.	22 47 11	2072	21 18 9	2062	19 49 0	2046	18 19 44	2040
	α Arietis E.	49 31 29	2243	48 6 11	2247	46 40 57	2250	45 15 47	2266
	Mars E.	59 16 55	2272	57 52 10	2262	56 27 14	2268	55 2 7	2262
	SUN E.	94 44 12	2300	93 21 5	2300	91 57 46	2304	90 34 14	2322
13	α Aquilæ W.	65 21 8	2000	66 41 36	2070	68 2 21	2400	69 23 41	2425
	α Arietis E.	38 12 13	2000	36 48 12	2027	35 24 32	2300	34 1 18	2376
	Mars E.	47 53 24	2170	46 26 50	2170	45 0 30	2100	43 33 26	2100
	SUN E.	83 33 15	2202	82 8 19	2240	80 43 7	2230	79 17 39	2221
14	α Aquilæ W.	76 17 12	2000	77 41 13	2000	79 5 39	2007	80 30 29	2046
	Fomalhaut W.	42 41 20	2000	44 2 35	2000	45 24 49	2000	46 48 0	2006
	α Arietis E.	27 15 8	2000	25 56 53	2072	24 40 15	2010	23 25 29	2002
	Mars E.	36 15 2	2004	34 46 33	2072	33 17 48	2000	31 48 48	2046
	SUN E.	72 5 55	2102	70 36 36	2100	69 11 1	2110	67 43 4	2003
15	α Aquilæ W.	87 40 36	2100	89 7 45	2100	90 35 15	2110	92 3 6	2100
	Fomalhaut W.	53 56 34	2107	55 24 35	2072	56 53 18	2000	58 22 42	2007
	α Pegasi W.	40 19 30	2400	41 40 43	2300	43 3 11	2300	44 26 50	2370
	Mars E.	24 30 3	2000	22 49 42	2007	21 19 13	2000	19 48 38	2000
	SUN E.	60 18 1	2005	58 47 54	2007	57 17 25	2000	55 46 34	2001
16	α Aquilæ W.	99 27 3	2072	100 56 42	2010	102 26 35	2000	103 56 42	2000
	Fomalhaut W.	65 59 17	2002	67 32 24	2007	69 6 4	2011	70 40 17	2006
	α Pegasi W.	51 40 47	2001	53 10 21	2002	54 40 44	2004	56 11 55	2017
	Jupiter W.	27 27 37	2072	29 7 8	2000	30 47 5	2000	32 27 29	2016
	SUN E.	48 6 30	2000	46 33 20	2042	44 59 46	2004	43 25 49	2006

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Dist.	IIIh.	P. L. of Dist.	VIh.	P. L. of Dist.	IXh.	P. L. of Dist.
17	Fomalhaut W.	72° 15' 3"	2763	73° 50' 20"	2740	75° 26' 7"	2717	77° 2' 24"	2696
	α Pegasi W.	57 43 52	2883	59 16 33	2860	60 49 56	2818	62 24 0	2789
	Jupiter W.	34 8 20	2497	35 49 37	2479	37 31 20	2460	39 13 29	2443
	SUN E.	41 51 29	2788	40 16 46	2773	38 41 41	2756	37 6 15	2740
22	SUN W.	26 23 43	2409	28 7 5	2408	29 50 33	2408	31 34 4	2408
	Spica E.	84 22 38	2088	82 31 20	2091	80 40 7	2094	78 48 59	2096
23	SUN W.	40 11 14	2417	41 54 25	2423	43 37 28	2429	45 20 22	2436
	Spica E.	69 35 10	2128	67 44 54	2186	65 54 49	2144	64 4 57	2183
	Saturn E.	107 55 4	2088	106 3 47	2096	104 12 41	2108	102 21 46	2111
24	SUN W.	53 52 8	2479	55 33 51	2480	57 15 19	2500	58 56 32	2611
	Venus W.	24 29 13	2184	26 18 5	2191	28 6 46	2199	29 55 15	2207
	Spica E.	54 59 17	2206	53 10 58	2218	51 22 58	2231	49 35 17	2245
	Saturn E.	93 10 24	2187	91 20 51	2167	89 31 33	2177	87 42 31	2188
	Antares E.	100 51 0	2231	99 3 18	2240	97 15 50	2249	95 28 36	2260
25	SUN W.	67 18 38	2673	68 58 12	2686	70 37 28	2697	72 16 27	2610
	Venus W.	38 54 24	2264	40 41 31	2266	42 28 22	2278	44 14 58	2285
	Spica E.	40 42 5	2230	38 56 35	2238	37 11 31	2267	35 26 54	2276
	Saturn E.	78 41 36	2247	76 54 19	2260	75 7 20	2273	73 20 40	2285
	Antares E.	86 36 32	2219	84 51 0	2231	83 5 46	2244	81 20 51	2256
26	SUN W.	80 26 48	2679	82 3 56	2693	83 40 46	2707	85 17 17	2730
	Venus W.	53 4 0	2341	54 49 0	2363	56 33 43	2364	58 18 10	2376
	Regulus W.	27 34 59	2300	29 19 31	2373	31 3 45	2386	32 47 40	2396
	Saturn E.	64 32 2	2380	62 47 16	2364	61 2 49	2377	59 18 41	2391
	Antares E.	72 41 11	2437	70 58 15	2443	69 15 40	2467	67 33 26	2473
27	SUN W.	93 15 16	2790	94 49 57	2804	96 24 20	2816	97 58 25	2831
	Venus W.	66 56 23	2431	68 39 14	2443	70 21 49	2453	72 4 8	2465
	Regulus W.	41 22 36	2466	43 4 39	2477	44 46 25	2489	46 27 53	2503
	Saturn E.	50 42 52	2468	49 0 40	2473	47 18 47	2485	45 37 12	2498
	Antares E.	59 7 33	2648	57 27 28	2666	55 47 45	2693	54 8 25	2699
	α Aquilæ E.	106 5 59	3001	104 35 48	3006	103 5 43	3013	101 35 45	3018
28	SUN W.	105 44 26	2898	107 16 47	2913	108 48 51	2924	110 20 39	2937
	Venus W.	80 31 56	2617	82 12 45	2627	83 53 20	2637	85 33 42	2646
	Regulus W.	54 50 47	2664	56 30 31	2676	58 9 59	2686	59 49 10	2696
	Saturn E.	37 14 1	2686	35 34 19	2679	33 54 55	2668	32 15 50	2666
	Antares E.	45 57 36	2687	44 20 39	2707	42 44 9	2732	41 6 6	2749
	α Aquilæ E.	94 8 12	3063	92 39 16	3073	91 10 33	3083	89 42 3	3096
29	SUN W.	117 55 40	3099	119 25 54	3111	120 55 53	3123	122 25 37	3136
	Venus W.	93 52 10	2694	95 31 13	2694	97 10 3	2612	98 48 41	2621
	Regulus W.	68 1 8	2697	69 38 46	2667	71 16 10	2678	72 53 19	2689
	α Aquilæ E.	82 23 26	3164	80 56 34	3179	79 30 0	3196	78 3 46	3213
30	SUN W.	129 50 43	3091	131 19 3	3103	132 47 9	3114	134 15 2	3124
	Venus W.	106 59 1	2693	108 36 32	2699	110 13 53	2678	111 51 3	2685
	Regulus W.	80 55 37	2739	82 31 25	2749	84 7 0	2766	85 42 23	2768
	Spica W.	27 49 20	2684	29 22 38	2683	30 55 57	2683	32 29 16	2686
	α Aquilæ E.	70 57 50	3308	69 33 48	3330	68 10 11	3363	66 47 0	3376
	Fomalhaut E.	104 1 2	3043	102 31 43	3049	101 2 31	3053	99 33 26	3061

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Dif.	XVh.	P. L. of Dif.	XVIIIh.	P. L. of Dif.	XXIh.	P. L. of Dif.
17	Fomalhaut	W.	78° 39' 10"	2678	80° 16' 23"	2686	81° 54' 3"	2686	83° 32' 9"	2618
	α Pegasi	W.	63 58 42	2760	65 34 2	2733	67 9 58	2707	68 46 29	2682
	Jupiter	W.	40 56 3	2434	42 39 3	2408	44 22 27	2390	46 6 16	2373
	Sun	E.	35 30 28	2734	33 54 20	2710	32 17 53	2696	30 41 8	2683
22	Sun	W.	33 17 35	2403	35 1 5	2406	36 44 33	2408	38 27 56	2412
	Spica	E.	76 57 57	2103	75 7 2	2106	73 16 15	2114	71 25 37	2121
23	Sun	W.	47 3 7	2448	48 45 41	2481	50 28 3	2460	52 10 12	2470
	Spica	E.	62 15 19	2163	60 25 55	2172	58 36 46	2153	56 47 53	2194
	Saturn	E.	100 31 3	2116	98 40 32	2129	96 50 15	2187	95 0 12	2147
24	Sun	W.	60 37 30	2822	62 18 12	2836	63 58 37	2846	65 38 46	2860
	Venus	W.	31 43 32	2216	33 31 36	2225	35 19 26	2236	37 7 2	2244
	Spica	E.	47 47 56	2268	46 0 55	2273	44 14 16	2296	42 27 59	2304
	Saturn	E.	85 53 45	2199	84 5 16	2211	82 17 5	2223	80 29 11	2236
	Antares	E.	93 41 37	2271	91 54 55	2263	90 8 30	2294	88 22 22	2307
25	Sun	W.	73 55 8	2624	75 33 31	2636	77 11 35	2651	78 49 21	2666
	Venus	W.	46 1 19	2296	47 47 24	2308	49 33 12	2319	51 18 44	2330
	Spica	E.	33 42 44	2396	31 59 4	2419	30 15 56	2449	28 33 21	2467
	Saturn	E.	71 34 18	2296	69 48 15	2311	68 2 31	2324	66 17 7	2337
	Antares	E.	79 36 16	2372	77 52 1	2386	76 8 5	2398	74 24 28	2412
26	Sun	W.	86 53 30	2738	88 29 24	2748	90 5 0	2763	91 40 17	2776
	Venus	W.	60 2 21	2386	61 46 16	2398	63 29 54	2409	65 13 16	2419
	Regulus	W.	34 31 17	2413	36 14 35	2426	37 57 34	2438	39 40 14	2451
	Saturn	E.	57 34 53	2404	55 51 24	2417	54 8 14	2431	52 25 23	2446
	Antares	E.	65 51 33	2486	64 10 0	2502	62 28 49	2517	60 48 0	2533
27	Sun	W.	99 32 12	2846	101 5 41	2860	102 38 53	2872	104 11 48	2886
	Venus	W.	73 46 11	2475	75 27 59	2486	77 9 33	2496	78 50 52	2507
	Regulus	W.	48 9 3	2519	49 49 55	2527	51 30 30	2540	53 10 47	2553
	Saturn	E.	43 55 56	2612	42 14 59	2626	40 34 21	2639	38 54 2	2652
	Antares	E.	52 29 28	2616	50 50 54	2638	49 12 44	2651	47 34 58	2669
	α Aquilæ	E.	100 5 54	2628	98 36 12	2634	97 6 41	2643	95 37 21	2652
28	Sun	W.	111 52 11	2969	113 23 27	2982	114 54 27	2976	116 25 11	2987
	Venus	W.	87 13 51	2566	88 53 46	2566	90 33 27	2576	92 12 55	2586
	Regulus	W.	61 28 5	2612	63 6 44	2624	64 45 7	2636	66 23 15	2646
	Saturn	E.	30 37 3	2620	28 58 35	2636	27 20 27	2650	25 42 40	2666
	Antares	E.	39 32 31	2771	37 57 25	2796	36 22 51	2821	34 48 50	2848
	α Aquilæ	E.	88 13 47	3108	86 45 47	3121	85 18 3	3135	83 50 36	3149
29	Sun	W.	123 55 6	3047	125 24 21	3068	126 53 22	3099	128 22 9	3080
	Venus	W.	100 27 8	2629	102 5 24	2638	103 43 28	2646	105 21 20	2656
	Regulus	W.	74 30 14	2699	76 6 55	2710	77 43 22	2719	79 19 36	2729
	α Aquilæ	E.	76 37 52	2220	75 12 18	2248	73 47 6	2267	72 22 16	2286
30	Sun	W.	135 42 42	3185	137 10 9	3146	138 37 23	3197	140 4 24	3168
	Venus	W.	113 28 3	2692	115 4 54	2699	116 41 35	2706	118 18 7	2713
	Regulus	W.	87 17 33	2777	88 52 31	2786	90 27 18	2796	92 1 53	2804
	Spica	W.	34 2 33	2867	35 35 47	2860	37 8 57	2863	38 42 3	2867
	α Aquilæ	E.	65 24 16	3400	64 2 0	3427	62 40 14	3464	61 18 59	3483
	Fomalhaut	E.	98 4 29	3063	96 35 40	3075	95 7 0	3083	93 38 30	3091

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S						Sideral Time of the Semi-diameter passing the Meridian.	Equation of Time, to be added to Apparent Time.	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Semi-diameter.				
Wed.	1	^h 6 ^m 42 ^s 51.91	10.330	N. 23° 5' 18.3"	10.58	15 46.15	68.77	^m 3 ^s 35.46	0.474	
Thur.	2	6 46 59.74	10.318	23 0 52.2	11.58	15 46.15	68.73	3 46.70	0.462	
Fri.	3	6 51 7.27	10.306	22 56 2.0	12.58	15 46.15	68.69	3 57.65	0.449	
Sat.	4	6 55 14.50	10.293	22 50 48.0	13.58	15 46.16	68.65	4 8.29	0.436	
Sun.	5	6 59 21.41	10.279	22 45 10.0	14.57	15 46.17	68.60	4 18.61	0.422	
Mon.	6	7 3 27.98	10.264	22 39 8.3	15.56	15 46.18	68.55	4 28.59	0.408	
Tues.	7	7 7 34.18	10.249	22 32 43.1	16.54	15 46.20	68.50	4 38.21	0.393	
Wed.	8	7 11 40.00	10.233	22 25 54.4	17.51	15 46.22	68.44	4 47.45	0.377	
Thur.	9	7 15 45.44	10.217	22 18 42.6	18.47	15 46.25	68.38	4 56.32	0.360	
Fri.	10	7 19 50.48	10.200	22 11 7.7	19.43	15 46.28	68.32	5 4.78	0.343	
Sat.	11	7 23 55.10	10.183	22 3 9.8	20.38	15 46.31	68.26	5 12.82	0.326	
Sun.	12	7 27 59.30	10.165	21 54 49.2	21.32	15 46.35	68.20	5 20.44	0.308	
Mon.	13	7 32 3.05	10.146	21 46 5.9	22.26	15 46.39	68.13	5 27.62	0.289	
Tues.	14	7 36 6.34	10.127	21 37 0.4	23.18	15 46.43	68.06	5 34.33	0.269	
Wed.	15	7 40 9.15	10.107	21 27 32.8	24.10	15 46.48	67.99	5 40.56	0.250	
Thur.	16	7 44 11.47	10.086	21 17 43.2	25.01	15 46.54	67.92	5 46.31	0.229	
Fri.	17	7 48 13.29	10.065	21 7 31.9	25.91	15 46.60	67.84	5 51.56	0.208	
Sat.	18	7 52 14.60	10.043	20 56 59.1	26.80	15 46.67	67.77	5 56.30	0.186	
Sun.	19	7 56 15.36	10.020	20 46 5.1	27.68	15 46.74	67.69	6 0.50	0.163	
Mon.	20	8 0 15.57	9.997	20 34 50.1	28.55	15 46.82	67.61	6 4.14	0.140	
Tues.	21	8 4 15.22	9.973	20 23 14.2	29.41	15 46.90	67.53	6 7.22	0.116	
Wed.	22	8 8 14.29	9.949	20 11 17.8	30.26	15 46.99	67.45	6 9.73	0.092	
Thur.	23	8 12 12.79	9.925	19 59 1.2	31.10	15 47.08	67.37	6 11.67	0.068	
Fri.	24	8 16 10.69	9.900	19 46 24.8	31.93	15 47.18	67.29	6 12.91	0.043	
Sat.	25	8 20 7.98	9.875	19 33 28.6	32.74	15 47.29	67.20	6 13.74	0.018	
Sun.	26	8 24 4.65	9.850	19 20 12.8	33.55	15 47.40	67.12	6 13.86	0.007	
Mon.	27	8 28 0.72	9.824	19 6 37.9	34.34	15 47.51	67.03	6 13.37	0.032	
Tues.	28	8 31 56.16	9.798	18 52 44.2	35.12	15 47.63	66.95	6 12.26	0.058	
Wed.	29	8 35 50.98	9.772	18 38 31.9	35.89	15 47.75	66.86	6 10.54	0.084	
Thur.	30	8 39 45.20	9.746	18 24 1.1	36.65	15 47.87	66.78	6 8.20	0.110	
Fri.	31	8 43 38.78	9.720	18 9 12.3	37.40	15 48.00	66.69	6 5.23	0.136	
Sat.	32	8 47 31.78	9.694	N. 17° 54' 5.7"	38.14	15 48.13	66.61	6 1.64	0.162	

NOTE. — Mean Time of the Semidiameter passing may be found by subtracting 0s.19 from the Sideral Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be subtracted from Mean Time.	Diff. for 1 hour.	Sidereal Time.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.			
Wed.	1	6 ^h 42 ^m 51. ^s 29	10.330	N. 23° 5' 18".9	10.58	3 ^m 35. ^s 43	0.474	6 ^h 39 ^m 15. ^s 86
Thur.	2	6 46 59.09	10.318	23 0 52.9	11.58	3 46.67	0.462	6 43 12.42
Fri.	3	6 51 6.59	10.306	22 56 2.8	12.58	3 57.62	0.449	6 47 8.97
Sat.	4	6 55 13.79	10.293	22 50 48.9	13.58	4 8.26	0.436	6 51 5.53
Sun.	5	6 59 20.67	10.279	22 45 11.0	14.57	4 18.58	0.422	6 55 2.09
Mon.	6	7 3 27.21	10.264	22 39 9.5	15.56	4 28.57	0.408	6 58 58.64
Tues.	7	7 7 33.38	10.249	22 32 44.4	16.54	4 38.18	0.393	7 2 55.20
Wed.	8	7 11 39.18	10.233	22 25 55.8	17.51	4 47.42	0.377	7 6 51.76
Thur.	9	7 15 44.60	10.217	22 18 44.1	18.47	4 56.29	0.360	7 10 48.31
Fri.	10	7 19 49.62	10.200	22 11 9.3	19.43	5 4.75	0.343	7 14 44.67
Sat.	11	7 23 54.22	10.183	22 3 11.5	20.38	5 12.79	0.326	7 18 41.43
Sun.	12	7 27 58.40	10.165	21 54 51.0	21.32	5 20.43	0.308	7 22 37.97
Mon.	13	7 32 2.13	10.146	21 46 7.9	22.26	5 27.59	0.289	7 26 34.54
Tues.	14	7 36 5.40	10.127	21 37 2.6	23.18	5 34.30	0.269	7 30 31.10
Wed.	15	7 40 8.19	10.107	21 27 35.1	24.10	5 40.54	0.250	7 34 27.65
Thur.	16	7 44 10.50	10.086	21 17 45.6	25.01	5 46.29	0.229	7 38 24.21
Fri.	17	7 48 12.31	10.065	21 7 34.4	25.91	5 51.54	0.208	7 42 20.77
Sat.	18	7 52 13.61	10.043	20 57 1.7	26.80	5 56.29	0.186	7 46 17.32
Sun.	19	7 56 14.36	10.020	20 46 7.8	27.68	6 0.48	0.163	7 50 13.88
Mon.	20	8 0 14.56	9.997	20 34 52.9	28.55	6 4.13	0.140	7 54 10.43
Tues.	21	8 4 14.20	9.973	20 23 17.2	29.41	6 7.21	0.116	7 58 6.99
Wed.	22	8 8 13.27	9.949	20 11 21.0	30.26	6 9.72	0.092	8 2 3.55
Thur.	23	8 12 11.76	9.925	19 59 4.5	31.10	6 11.66	0.068	8 6 0.10
Fri.	24	8 16 9.66	9.900	19 46 28.1	31.93	6 13.00	0.043	8 9 56.66
Sat.	25	8 20 6.95	9.875	19 33 32.0	32.74	6 13.74	0.018	8 13 53.21
Sun.	26	8 24 3.63	9.850	19 20 16.3	33.55	6 13.86	0.007	8 17 49.77
Mon.	27	8 27 59.70	9.824	19 6 41.5	34.34	6 13.37	0.002	8 21 46.83
Tues.	28	8 31 55.15	9.798	18 52 47.8	35.12	6 12.27	0.008	8 25 42.88
Wed.	29	8 35 49.98	9.772	18 38 35.6	35.89	6 10.54	0.004	8 29 39.44
Thur.	30	8 39 44.20	9.746	18 24 4.9	36.65	6 8.21	0.110	8 33 35.99
Fri.	31	8 43 37.79	9.720	18 9 16.1	37.40	6 5.24	0.136	8 37 32.55
Sat.	32	8 47 30.76	9.694	N. 17° 54' 9.5"	38.14	6 1.66	0.162	8 41 29.10

NOTE. — The Sundialtime for Mean Noon may be assumed the same as that for Apparent Noon.

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal Oh.
		True LONGITUDE.		Diff. for 1 hour.	LATITUDE.			
		λ	λ'					
1	183	99° 51' 7.4	50' 51.1	142.94	+0.87	0.0072195	0.0	17 17 53.64
2	184	100 48 18.0	48 1.5	142.93	0.86	.0072187	0.7	17 13 57.73
3	185	101 45 28.4	45 11.7	142.92	0.82	.0072163	1.3	17 10 1.82
4	186	102 42 38.8	42 21.9	142.92	0.74	.0072123	1.9	17 6 5.90
5	187	103 39 49.2	39 32.1	142.92	0.65	.0072069	2.5	17 2 9.99
6	188	104 36 59.7	36 42.4	142.93	0.54	.0072001	3.1	16 58 14.09
7	189	105 34 10.5	33 53.1	142.95	0.41	.0071919	3.7	16 54 18.18
8	190	106 31 21.7	31 4.2	142.96	0.28	.0071822	4.3	16 50 22.27
9	191	107 28 33.3	28 15.6	142.98	0.15	.0071709	5.0	16 46 26.36
10	192	108 25 45.2	25 27.3	143.00	+0.02	.0071579	5.8	16 42 30.44
11	193	109 22 57.5	22 39.4	143.02	-0.10	.0071430	6.6	16 38 34.53
12	194	110 20 10.5	19 52.3	143.04	0.19	.0071262	7.4	16 34 38.62
13	195	111 17 24.1	17 5.8	143.07	0.25	.0071074	8.3	16 30 42.71
14	196	112 14 38.3	14 19.8	143.10	0.29	.0070865	9.2	16 26 46.80
15	197	113 11 53.2	11 34.5	143.13	0.30	.0070633	10.1	16 22 50.89
16	198	114 9 8.7	8 49.9	143.15	0.28	.0070377	11.1	16 18 54.98
17	199	115 6 24.8	6 5.9	143.18	0.23	.0070096	12.2	16 14 59.07
18	200	116 3 41.6	3 22.5	143.20	0.15	.0069790	13.3	16 11 3.16
19	201	117 0 58.9	0 39.7	143.23	-0.05	.0069456	14.4	16 7 7.25
20	202	117 58 16.8	57 57.4	143.25	+0.07	.0069101	15.4	16 3 11.34
21	203	118 55 35.2	55 15.7	143.28	0.20	.0068718	16.5	15 59 15.43
22	204	119 52 54.2	52 34.6	143.30	0.34	.0068309	17.6	15 55 19.52
23	205	120 50 13.7	49 54.0	143.32	0.47	.0067875	18.6	15 51 23.61
24	206	121 47 33.7	47 13.8	143.34	0.59	.0067417	19.5	15 47 27.70
25	207	122 44 54.2	44 34.1	143.36	0.69	.0066937	20.4	15 43 31.79
26	208	123 42 15.1	41 54.9	143.38	0.78	.0066436	21.3	15 39 35.87
27	209	124 39 36.5	39 16.2	143.40	0.84	.0065915	22.1	15 35 39.96
28	210	125 36 58.5	36 38.1	143.42	0.86	.0065375	22.8	15 31 44.05
29	211	126 34 21.0	34 0.4	143.44	0.86	.0064818	23.5	15 27 48.14
30	212	127 31 44.1	31 23.3	143.47	0.83	.0064246	24.1	15 23 52.24
31	213	128 29 7.8	28 46.9	143.50	0.76	.0063659	24.7	15 19 56.33
32	214	129 26 32.3	26 11.3	143.53	+0.67	0.0063058	25.3	15 16 0.42

NOTE: λ corresponds to the true equinox of the date, λ' to the mean equinox of January 0d.

GREENWICH MEAN TIME.									
Day of the Month.	THE MOON'S								
	SEMI- DIAMETER		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	
1	15 12.7	15 8.8	55 42.9	-1.23	55 28.6	-1.15	9 42.3	2.04	10.9
2	15 5.2	15 1.8	55 15.4	1.06	55 3.1	0.98	10 31.4	2.05	11.9
3	14 58.8	14 56.0	54 51.8	0.90	54 41.6	0.81	11 20.7	2.05	12.9
4	14 53.5	14 51.3	54 32.4	0.72	54 24.3	0.63	12 9.6	2.02	13.9
5	14 49.4	14 47.8	54 17.3	0.53	54 11.5	0.43	12 57.7	1.98	14.9
6	14 46.6	14 45.7	54 6.9	0.32	54 3.7	-0.20	13 44.5	1.93	15.9
7	14 45.2	14 45.2	54 2.0	-0.07	54 2.0	+0.07	14 29.9	1.87	16.9
8	14 45.7	14 46.7	54 3.7	+0.22	54 7.3	0.38	15 14.1	1.82	17.9
9	14 48.2	14 50.3	54 12.9	0.55	54 20.6	0.73	15 57.5	1.80	18.9
10	14 53.0	14 56.3	54 30.5	0.91	54 42.6	1.10	16 40.5	1.80	19.9
11	15 0.2	15 4.7	54 56.9	1.29	55 13.6	1.48	17 24.0	1.83	20.9
12	15 9.8	15 15.6	55 32.4	1.66	55 53.4	1.83	18 8.7	1.90	21.9
13	15 21.8	15 28.6	56 16.4	2.00	56 41.3	2.14	18 55.5	2.01	22.9
14	15 35.8	15 43.3	57 7.7	2.25	57 35.2	2.33	19 45.3	2.15	23.9
15	15 51.0	15 58.8	58 3.6	2.37	58 32.1	2.36	20 38.7	2.31	24.9
16	16 6.4	16 13.8	59 0.3	2.31	59 27.5	2.20	21 35.9	2.46	25.9
17	16 20.8	16 27.1	59 53.1	2.03	60 16.2	1.80	22 36.2	2.56	26.9
18	16 32.6	16 37.0	60 36.3	1.52	60 52.6	1.19	23 38.3	2.60	27.9
19	16 40.3	16 42.4	61 4.8	0.82	61 12.4	+0.43	δ		28.9
20	16 43.1	16 42.6	61 15.2	+0.03	61 13.1	-0.37	0 40.3	2.55	0.6
21	16 40.7	16 37.7	61 6.3	-0.75	60 55.1	1.10	1 40.4	2.45	1.6
22	16 33.5	16 28.4	60 39.8	1.41	60 21.2	1.67	2 37.7	2.33	2.6
23	16 22.6	16 16.2	59 59.7	1.88	59 36.1	2.03	3 32.1	2.21	3.6
24	16 9.3	16 2.2	59 10.9	2.13	58 44.9	2.18	4 23.9	2.12	4.6
25	15 55.1	15 48.0	58 18.6	2.18	57 52.6	2.14	5 13.9	2.06	5.6
26	15 41.1	15 34.4	57 27.2	2.08	57 2.7	1.98	6 2.9	2.03	6.6
27	15 28.1	15 22.1	56 39.5	1.87	56 17.7	1.75	6 51.4	2.02	7.6
28	15 16.6	15 11.6	55 57.5	1.62	55 38.9	1.48	7 40.0	2.03	8.6
29	15 6.9	15 2.8	55 22.0	1.34	55 6.8	1.20	8 28.8	2.04	9.6
30	14 59.1	14 55.9	54 53.2	1.06	54 41.3	0.93	9 17.7	2.04	10.6
31	14 53.1	14 50.7	54 30.9	0.80	54 22.1	0.67	10 6.4	2.02	11.6
32	14 48.7	14 47.1	54 14.8	-0.55	54 8.9	-0.43	10 54.5	1.99	12.6

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
WEDNESDAY 1.					FRIDAY 3.				
0	16 2 27.06	2.1294	S.15° 29' 35.5"	6.386	0	17 45 19.85	2.1495	S.18° 56' 40.7"	2.187
1	16 4 34.84	2.1301	15 35 56.2	6.304	1	17 47 28.82	2.1493	18 58 46.1	2.043
2	16 6 42.67	2.1308	15 42 12.0	6.223	2	17 49 37.77	2.1491	19 0 45.9	1.949
3	16 8 50.54	2.1316	15 48 22.9	6.141	3	17 51 46.71	2.1489	19 2 40.1	1.856
4	16 10 58.46	2.1324	15 54 28.9	6.059	4	17 53 55.64	2.1486	19 4 28.6	1.762
5	16 13 6.43	2.1332	16 0 30.0	5.977	5	17 56 4.55	2.1483	19 6 11.5	1.668
6	16 15 14.44	2.1340	16 6 26.1	5.894	6	17 58 13.44	2.1480	19 7 48.7	1.574
7	16 17 22.50	2.1347	16 12 17.2	5.811	7	18 0 22.31	2.1477	19 9 20.3	1.479
8	16 19 30.60	2.1354	16 18 3.4	5.728	8	18 2 31.16	2.1473	19 10 46.2	1.386
9	16 21 38.74	2.1361	16 23 44.6	5.644	9	18 4 39.98	2.1468	19 12 6.5	1.292
10	16 23 46.93	2.1368	16 29 20.7	5.560	10	18 6 48.77	2.1463	19 13 21.2	1.198
11	16 25 55.16	2.1375	16 34 51.7	5.475	11	18 8 57.53	2.1457	19 14 30.3	1.104
12	16 28 3.43	2.1382	16 40 17.7	5.390	12	18 11 6.25	2.1452	19 15 33.7	1.010
13	16 30 11.74	2.1389	16 45 38.5	5.304	13	18 13 14.95	2.1447	19 16 31.5	0.916
14	16 32 20.10	2.1396	16 50 54.2	5.218	14	18 15 23.61	2.1440	19 17 23.6	0.822
15	16 34 28.50	2.1402	16 56 4.7	5.132	15	18 17 32.23	2.1433	19 18 10.1	0.728
16	16 36 36.93	2.1408	17 1 10.1	5.046	16	18 19 40.81	2.1426	19 18 51.0	0.634
17	16 38 45.40	2.1414	17 6 10.2	4.960	17	18 21 49.35	2.1419	19 19 26.3	0.541
18	16 40 53.90	2.1421	17 11 5.1	4.871	18	18 23 57.84	2.1411	19 19 55.9	0.447
19	16 43 2.44	2.1427	17 15 54.7	4.783	19	18 26 6.28	2.1403	19 20 19.9	0.353
20	16 45 11.02	2.1433	17 20 39.1	4.695	20	18 28 14.68	2.1396	19 20 38.3	0.260
21	16 47 19.63	2.1438	17 25 18.2	4.607	21	18 30 23.03	2.1387	19 20 51.1	0.167
22	16 49 28.27	2.1443	17 29 52.0	4.519	22	18 32 31.32	2.1378	19 20 58.3	0.074
23	16 51 36.94	2.1448	S.17° 34' 20.5"	4.431	23	18 34 39.56	2.1369	S.19° 20' 59.9"	0.020
THURSDAY 2.					SATURDAY 4.				
0	16 53 45.65	2.1453	S.17° 38' 43.7"	4.343	0	18 36 47.75	2.1369	S.19° 20' 55.9"	0.113
1	16 55 54.38	2.1458	17 43 1.5	4.259	1	18 38 55.88	2.1349	19 20 46.3	0.206
2	16 58 3.14	2.1463	17 47 13.9	4.163	2	18 41 3.94	2.1339	19 20 31.2	0.299
3	17 0 11.93	2.1467	17 51 20.9	4.073	3	18 43 11.94	2.1328	19 20 10.5	0.392
4	17 2 20.74	2.1471	17 55 22.6	3.982	4	18 45 19.88	2.1318	19 19 44.2	0.484
5	17 4 29.57	2.1474	17 59 18.8	3.891	5	18 47 27.75	2.1307	19 19 12.4	0.576
6	17 6 38.43	2.1478	18 3 9.5	3.800	6	18 49 35.56	2.1296	19 18 35.1	0.668
7	17 8 47.31	2.1482	18 6 54.7	3.709	7	18 51 43.29	2.1283	19 17 52.3	0.760
8	17 10 56.21	2.1486	18 10 34.6	3.619	8	18 53 50.95	2.1271	19 17 3.9	0.852
9	17 13 5.13	2.1488	18 14 9.0	3.528	9	18 55 58.54	2.1268	19 16 10.0	0.943
10	17 15 14.06	2.1490	18 17 37.9	3.437	10	18 58 6.05	2.1246	19 15 10.7	1.035
11	17 17 23.00	2.1492	18 21 1.3	3.345	11	19 0 13.48	2.1222	19 14 5.9	1.126
12	17 19 31.96	2.1494	18 24 19.3	3.253	12	19 2 20.84	2.1219	19 12 55.6	1.217
13	17 21 40.93	2.1496	18 27 31.7	3.160	13	19 4 28.11	2.1206	19 11 39.9	1.308
14	17 23 49.91	2.1497	18 30 38.5	3.068	14	19 6 35.30	2.1191	19 10 18.7	1.398
15	17 25 58.90	2.1498	18 33 39.8	2.975	15	19 8 42.40	2.1177	19 8 52.1	1.488
16	17 28 7.89	2.1499	18 36 35.5	2.883	16	19 10 49.42	2.1163	19 7 20.1	1.578
17	17 30 16.89	2.1500	18 39 25.7	2.790	17	19 12 56.35	2.1148	19 5 42.7	1.668
18	17 32 25.89	2.1500	18 42 10.4	2.697	18	19 15 3.19	2.1133	19 4 0.0	1.758
19	17 34 34.89	2.1500	18 44 49.5	2.603	19	19 17 9.94	2.1117	19 2 11.9	1.847
20	17 36 43.89	2.1500	18 47 22.9	2.510	20	19 19 16.59	2.1101	19 0 18.4	1.936
21	17 38 52.89	2.1499	18 49 50.7	2.417	21	19 21 23.15	2.1086	18 58 19.6	2.023
22	17 41 1.88	2.1498	18 52 13.0	2.324	22	19 23 29.61	2.1069	18 56 15.6	2.113
23	17 43 10.87	2.1497	18 54 29.7	2.231	23	19 25 35.97	2.1052	18 54 6.2	2.200
24	17 45 19.85	2.1495	S.18° 56' 40.7"	2.137	24	19 27 42.23	2.1035	S.18° 51' 51.6"	2.288

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SUNDAY 5.					TUESDAY 7.				
0	19 27 42.23	2.1035	S.18 51 51.6	2.288	0	21 6 23.71	2.0047	S.15 28 18.8	6.025
1	19 29 48.39	2.1018	18 49 31.7	2.275	1	21 8 23.93	2.0026	15 22 15.3	6.092
2	19 31 54.45	2.1001	18 47 6.6	2.462	2	21 10 24.02	2.0004	15 16 7.8	6.158
3	19 34 0.40	2.0983	18 44 36.3	2.549	3	21 12 23.98	1.9983	15 9 56.4	6.223
4	19 36 6.25	2.0966	18 42 0.7	2.635	4	21 14 23.81	1.9961	15 3 41.1	6.288
5	19 38 11.99	2.0948	18 39 20.0	2.721	5	21 16 23.51	1.9940	14 57 21.9	6.353
6	19 40 17.62	2.0930	18 36 34.2	2.807	6	21 18 23.09	1.9919	14 50 58.8	6.416
7	19 42 23.14	2.0911	18 33 43.2	2.892	7	21 20 22.54	1.9898	14 44 31.9	6.479
8	19 44 28.55	2.0892	18 30 47.1	2.977	8	21 22 21.86	1.9876	14 38 1.3	6.542
9	19 46 33.85	2.0873	18 27 45.9	3.062	9	21 24 21.05	1.9855	14 31 26.9	6.604
10	19 48 39.03	2.0855	18 24 39.7	3.146	10	21 26 20.12	1.9834	14 24 48.8	6.666
11	19 50 44.10	2.0836	18 21 28.5	3.229	11	21 28 19.07	1.9814	14 18 7.0	6.727
12	19 52 49.06	2.0817	18 18 12.2	3.313	12	21 30 17.89	1.9793	14 11 21.5	6.788
13	19 54 53.90	2.0797	18 14 50.9	3.396	13	21 32 16.59	1.9773	14 4 32.4	6.848
14	19 56 58.62	2.0777	18 11 24.6	3.479	14	21 34 15.17	1.9753	13 57 39.7	6.906
15	19 59 3.22	2.0757	18 7 53.4	3.561	15	21 36 13.63	1.9733	13 50 43.4	6.967
16	20 1 7.70	2.0737	18 4 17.3	3.643	16	21 38 11.96	1.9713	13 43 43.6	7.026
17	20 3 12.06	2.0716	18 0 36.3	3.724	17	21 40 10.18	1.9693	13 36 40.3	7.084
18	20 5 16.29	2.0696	17 56 50.4	3.806	18	21 42 8.28	1.9673	13 29 33.5	7.141
19	20 7 20.40	2.0675	17 52 59.6	3.887	19	21 44 6.26	1.9654	13 22 23.3	7.198
20	20 9 24.39	2.0654	17 49 4.0	3.967	20	21 46 4.13	1.9635	13 15 9.7	7.255
21	20 11 28.25	2.0633	17 45 3.6	4.046	21	21 48 1.89	1.9617	13 7 52.7	7.311
22	20 13 31.99	2.0613	17 40 58.5	4.125	22	21 49 59.53	1.9598	13 0 32.4	7.367
23	20 15 35.60	2.0592	S.17 36 48.6	4.204	23	21 51 57.06	1.9579	S.12 53 8.7	7.422
MONDAY 6.					WEDNESDAY 8.				
0	20 17 39.09	2.0571	S.17 32 34.0	4.283	0	21 53 54.48	1.9561	S.12 45 41.8	7.476
1	20 19 42.45	2.0549	17 28 14.7	4.361	1	21 55 51.79	1.9543	12 38 11.7	7.529
2	20 21 45.68	2.0528	17 23 50.7	4.439	2	21 57 48.99	1.9525	12 30 38.3	7.583
3	20 23 48.78	2.0506	17 19 22.1	4.516	3	21 59 46.09	1.9508	12 23 1.7	7.636
4	20 25 51.75	2.0485	17 14 48.8	4.592	4	22 1 43.08	1.9490	12 15 22.0	7.688
5	20 27 54.59	2.0463	17 10 11.0	4.668	5	22 3 39.97	1.9473	12 7 39.2	7.740
6	20 29 57.31	2.0442	17 5 28.6	4.744	6	22 5 36.76	1.9456	11 59 53.2	7.791
7	20 31 59.90	2.0420	17 0 41.7	4.819	7	22 7 33.45	1.9440	11 52 4.2	7.842
8	20 34 2.35	2.0398	16 55 50.3	4.894	8	22 9 30.04	1.9424	11 44 12.2	7.892
9	20 36 4.67	2.0376	16 50 54.4	4.968	9	22 11 26.53	1.9408	11 36 17.2	7.942
10	20 38 6.86	2.0355	16 45 54.1	5.042	10	22 13 22.93	1.9393	11 28 19.2	7.991
11	20 40 8.92	2.0333	16 40 49.4	5.116	11	22 15 19.24	1.9377	11 20 18.3	8.039
12	20 42 10.85	2.0311	16 35 40.2	5.189	12	22 17 15.45	1.9361	11 12 14.5	8.087
13	20 44 12.65	2.0288	16 30 26.7	5.262	13	22 19 11.57	1.9346	11 4 7.8	8.135
14	20 46 14.31	2.0266	16 25 8.8	5.333	14	22 21 7.60	1.9331	10 55 58.3	8.182
15	20 48 15.84	2.0244	16 19 46.7	5.404	15	22 23 3.55	1.9317	10 47 46.0	8.228
16	20 50 17.24	2.0222	16 14 20.3	5.475	16	22 24 59.41	1.9303	10 39 30.9	8.274
17	20 52 18.51	2.0201	16 8 49.7	5.546	17	22 26 55.19	1.9290	10 31 13.1	8.319
18	20 54 19.65	2.0179	16 3 14.8	5.616	18	22 28 50.89	1.9276	10 22 52.6	8.364
19	20 56 20.66	2.0157	15 57 35.7	5.686	19	22 30 46.51	1.9263	10 14 29.4	8.409
20	20 58 21.53	2.0135	15 51 52.5	5.756	20	22 32 42.05	1.9250	10 6 3.5	8.453
21	21 0 22.27	2.0113	15 46 5.2	5.823	21	22 34 37.51	1.9238	9 57 35.0	8.496
22	21 2 22.88	2.0091	15 40 13.8	5.891	22	22 36 32.90	1.9226	9 49 4.0	8.539
23	21 4 23.26	2.0069	15 34 18.3	5.958	23	22 38 28.22	1.9214	9 40 30.4	8.581
24	21 6 23.71	2.0047	S.15 28 18.8	6.025	24	22 40 23.47	1.9203	S. 9 31 54.3	8.622

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
THURSDAY 9.					SATURDAY 11.				
0	22 40 23.47	1.9203	S. 9 31' 54.3	8.922	0	0 12 0.83	1.9146	S. 2 0' 1.1	10.000
1	22 42 18.65	1.9192	9 23 15.7	8.863	1	0 13 55.74	1.9137	1 50 0.6	10.016
2	22 44 13.77	1.9181	9 14 34.7	8.704	2	0 15 50.71	1.9128	1 39 59.2	10.031
3	22 46 8.83	1.9171	9 5 51.2	8.745	3	0 17 45.75	1.9119	1 29 56.9	10.045
4	22 48 3.82	1.9161	8 57 5.3	8.784	4	0 19 40.86	1.9111	1 19 53.8	10.058
5	22 49 58.75	1.9151	8 48 17.1	8.823	5	0 21 36.04	1.9208	1 9 49.9	10.071
6	22 51 53.63	1.9142	8 39 26.5	8.862	6	0 23 31.30	1.9217	0 59 45.3	10.084
7	22 53 48.45	1.9133	8 30 33.6	8.900	7	0 25 26.64	1.9231	0 49 39.9	10.096
8	22 55 43.22	1.9125	8 21 38.5	8.938	8	0 27 22.07	1.9245	0 39 33.8	10.107
9	22 57 37.94	1.9117	8 12 41.1	8.975	9	0 29 17.58	1.9259	0 29 27.1	10.118
10	22 59 32.62	1.9109	8 3 41.5	9.011	10	0 31 13.18	1.9275	0 19 19.7	10.128
11	23 1 27.25	1.9102	7 54 39.8	9.047	11	0 33 8.88	1.9291	S. 0 9 11.7	10.137
12	23 3 21.84	1.9095	7 45 35.9	9.082	12	0 35 4.67	1.9307	N. 0 0 56.8	10.146
13	23 5 16.38	1.9089	7 36 29.9	9.117	13	0 37 0.56	1.9324	0 11 5.8	10.154
14	23 7 10.89	1.9083	7 27 21.8	9.151	14	0 38 56.56	1.9341	0 21 15.3	10.162
15	23 9 5.37	1.9077	7 18 11.7	9.185	15	0 40 52.66	1.9359	0 31 25.2	10.169
16	23 10 59.81	1.9072	7 8 59.6	9.218	16	0 42 48.87	1.9378	0 41 35.6	10.176
17	23 12 54.22	1.9067	6 59 45.5	9.251	17	0 44 45.20	1.9397	0 51 46.3	10.182
18	23 14 48.61	1.9062	6 50 29.5	9.283	18	0 46 41.64	1.9417	1 1 57.4	10.187
19	23 16 42.97	1.9058	6 41 11.5	9.315	19	0 48 38.20	1.9437	1 12 8.8	10.192
20	23 18 37.31	1.9055	6 31 51.7	9.346	20	0 50 34.88	1.9458	1 22 20.4	10.198
21	23 20 31.63	1.9052	6 22 30.0	9.377	21	0 52 31.69	1.9479	1 32 32.2	10.199
22	23 22 25.93	1.9049	6 13 6.5	9.407	22	0 54 28.63	1.9501	1 42 44.2	10.201
23	23 24 20.22	1.9047	S. 6 3 41.2	9.437	23	0 56 25.70	1.9523	N. 1 52 56.4	10.203
FRIDAY 10.					SUNDAY 12.				
0	23 26 14.49	1.9045	S. 5 54 14.1	9.466	0	0 58 22.91	1.9546	N. 2 3 8.6	10.204
1	23 28 8.75	1.9043	5 44 45.3	9.494	1	1 0 20.26	1.9570	2 13 20.9	10.205
2	23 30 3.01	1.9043	5 35 14.8	9.522	2	1 2 17.75	1.9594	2 23 33.2	10.205
3	23 31 57.26	1.9043	5 25 42.7	9.549	3	1 4 15.39	1.9618	2 33 45.5	10.205
4	23 33 51.52	1.9043	5 16 8.9	9.576	4	1 6 13.17	1.9644	2 43 57.8	10.204
5	23 35 45.78	1.9044	5 6 33.5	9.602	5	1 8 11.11	1.9670	2 54 10.0	10.202
6	23 37 40.04	1.9045	4 56 56.6	9.628	6	1 10 9.21	1.9697	3 4 22.0	10.199
7	23 39 34.31	1.9046	4 47 18.1	9.653	7	1 12 7.47	1.9724	3 14 33.9	10.196
8	23 41 28.59	1.9048	4 37 38.2	9.678	8	1 14 5.90	1.9751	3 24 45.5	10.192
9	23 43 22.88	1.9050	4 27 56.8	9.702	9	1 16 4.49	1.9779	3 34 56.9	10.187
10	23 45 17.19	1.9053	4 18 13.9	9.726	10	1 18 3.25	1.9808	3 45 7.9	10.181
11	23 47 11.51	1.9056	4 8 29.6	9.749	11	1 20 2.19	1.9837	3 55 18.6	10.175
12	23 49 5.86	1.9060	3 58 44.0	9.772	12	1 22 1.30	1.9867	4 5 28.9	10.168
13	23 51 0.23	1.9064	3 48 57.0	9.794	13	1 24 0.60	1.9896	4 15 38.8	10.161
14	23 52 54.63	1.9069	3 39 8.7	9.816	14	1 26 0.08	1.9929	4 25 48.2	10.153
15	23 54 49.06	1.9075	3 29 19.1	9.837	15	1 27 59.75	1.9960	4 35 57.1	10.143
16	23 56 43.53	1.9081	3 19 28.3	9.857	16	1 29 59.60	1.9992	4 46 5.4	10.133
17	23 58 38.03	1.9087	3 9 36.3	9.877	17	1 31 59.65	2.0025	4 56 13.1	10.122
18	0 0 32.57	1.9094	2 59 43.1	9.896	18	1 33 59.90	2.0068	5 6 20.1	10.111
19	0 2 27.16	1.9102	2 49 48.8	9.916	19	1 36 0.35	2.0092	5 16 26.4	10.099
20	0 4 21.79	1.9110	2 39 53.3	9.933	20	1 38 1.00	2.0127	5 26 32.0	10.086
21	0 6 16.47	1.9118	2 29 56.8	9.951	21	1 40 1.86	2.0162	5 36 36.8	10.073
22	0 8 11.20	1.9127	2 19 59.2	9.968	22	1 42 2.94	2.0197	5 46 40.8	10.058
23	0 10 5.99	1.9136	2 10 0.6	9.984	23	1 44 4.23	2.0233	5 56 43.9	10.043
24	0 12 0.83	1.9146	S. 2 0 1.1	10.000	24	1 46 5.74	2.0270	N. 6 6 46.0	10.027

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
MONDAY 13.					WEDNESDAY 15.				
0	1 ^h 46 ^m 5.74 ^s	2.0270	N. 6° 6' 46.0"	10.027	0	3 ^h 28 ^m 35.85 ^s	2.2613	N. 13° 32' 31.0"	8.161
1	1 48 7.47	2.0307	6 16 47.2	10.011	1	3 30 51.70	2.2671	13 40 38.8	8.097
2	1 50 9.42	2.0346	6 26 47.3	9.998	2	3 33 7.90	2.2729	13 48 42.6	8.031
3	1 52 11.60	2.0383	6 36 46.3	9.974	3	3 35 24.45	2.2788	13 56 42.4	7.963
4	1 54 14.02	2.0422	6 46 44.2	9.954	4	3 37 41.36	2.2847	14 4 38.2	7.894
5	1 56 16.67	2.0462	6 56 40.9	9.934	5	3 39 58.62	2.2906	14 12 29.8	7.824
6	1 58 19.56	2.0502	7 6 36.3	9.913	6	3 42 16.23	2.2965	14 20 17.1	7.753
7	2 0 22.69	2.0542	7 16 30.4	9.892	7	3 44 34.20	2.3025	14 28 0.2	7.682
8	2 2 26.07	2.0583	7 26 23.3	9.869	8	3 46 52.53	2.3084	14 35 38.9	7.608
9	2 4 29.69	2.0624	7 36 14.8	9.846	9	3 49 11.22	2.3144	14 43 13.2	7.533
10	2 6 33.56	2.0666	7 46 4.8	9.822	10	3 51 30.26	2.3203	14 50 42.9	7.457
11	2 8 37.69	2.0709	7 55 53.3	9.796	11	3 53 49.66	2.3263	14 58 8.0	7.380
12	2 10 42.07	2.0753	8 5 40.3	9.769	12	3 56 9.41	2.3323	15 5 28.5	7.301
13	2 12 46.72	2.0797	8 15 25.7	9.742	13	3 58 29.53	2.3383	15 12 44.3	7.222
14	2 14 51.63	2.0841	8 25 9.4	9.714	14	4 0 50.01	2.3443	15 19 55.2	7.141
15	2 16 56.81	2.0886	8 34 51.4	9.685	15	4 3 10.85	2.3502	15 27 1.2	7.069
16	2 19 2.26	2.0931	8 44 31.6	9.655	16	4 5 32.04	2.3562	15 34 2.3	6.976
17	2 21 7.98	2.0976	8 54 10.0	9.626	17	4 7 53.59	2.3622	15 40 58.3	6.892
18	2 23 13.97	2.1022	9 3 46.6	9.598	18	4 10 15.50	2.3682	15 47 49.3	6.806
19	2 25 20.24	2.1069	9 13 21.2	9.569	19	4 12 37.77	2.3742	15 54 35.1	6.718
20	2 27 26.80	2.1116	9 22 53.8	9.527	20	4 15 0.40	2.3802	16 1 15.5	6.630
21	2 29 33.64	2.1164	9 32 24.3	9.493	21	4 17 23.39	2.3862	16 7 50.6	6.541
22	2 31 40.77	2.1213	9 41 52.8	9.457	22	4 19 46.74	2.3921	16 14 20.4	6.450
23	2 33 48.19	2.1262	N. 9 51 19.1	9.420	23	4 22 10.44	2.3980	N. 16 20 44.7	6.358
TUESDAY 14.					THURSDAY 16.				
0	2 35 55.91	2.1311	N. 10 0 43.2	9.382	0	4 24 34.50	2.4039	N. 16 27 3.4	6.264
1	2 38 3.92	2.1360	10 10 5.0	9.344	1	4 26 58.91	2.4098	16 33 16.5	6.170
2	2 40 12.23	2.1410	10 19 24.5	9.304	2	4 29 23.68	2.4157	16 39 23.8	6.074
3	2 42 20.84	2.1461	10 28 41.6	9.263	3	4 31 48.80	2.4216	16 45 25.4	5.978
4	2 44 29.76	2.1513	10 37 56.1	9.221	4	4 34 14.27	2.4274	16 51 21.1	5.880
5	2 46 38.98	2.1563	10 47 8.1	9.179	5	4 36 40.09	2.4332	16 57 10.9	5.780
6	2 48 48.52	2.1615	10 56 17.6	9.136	6	4 39 6.25	2.4390	17 2 54.7	5.679
7	2 50 58.37	2.1668	11 5 24.4	9.091	7	4 41 32.76	2.4447	17 8 32.4	5.577
8	2 53 8.54	2.1720	11 14 28.5	9.045	8	4 43 59.62	2.4504	17 14 4.0	5.474
9	2 55 19.02	2.1773	11 23 29.8	8.998	9	4 46 26.82	2.4561	17 19 29.3	5.370
10	2 57 29.82	2.1827	11 32 28.3	8.950	10	4 48 54.35	2.4617	17 24 48.4	5.265
11	2 59 40.94	2.1881	11 41 23.8	8.901	11	4 51 22.22	2.4673	17 30 1.1	5.168
12	3 1 52.39	2.1935	11 50 16.4	8.851	12	4 53 50.43	2.4729	17 35 7.3	5.060
13	3 4 4.17	2.1990	11 59 6.0	8.800	13	4 56 18.97	2.4784	17 40 7.0	4.941
14	3 6 16.27	2.2045	12 7 52.4	8.748	14	4 58 47.84	2.4839	17 45 0.2	4.831
15	3 8 28.70	2.2100	12 16 35.7	8.694	15	5 1 17.03	2.4893	17 49 46.7	4.719
16	3 10 41.47	2.2156	12 25 15.7	8.639	16	5 3 46.55	2.4947	17 54 26.5	4.606
17	3 12 54.58	2.2212	12 33 52.4	8.583	17	5 6 16.39	2.5000	17 58 59.5	4.493
18	3 15 8.02	2.2268	12 42 25.7	8.526	18	5 8 46.55	2.5053	18 3 25.6	4.379
19	3 17 21.80	2.2325	12 50 55.6	8.469	19	5 11 17.02	2.5105	18 7 44.8	4.263
20	3 19 35.92	2.2382	12 59 22.0	8.410	20	5 13 47.81	2.5156	18 11 57.1	4.146
21	3 21 50.38	2.2439	13 7 44.8	8.350	21	5 16 18.90	2.5207	18 16 2.3	4.027
22	3 24 5.19	2.2497	13 16 4.0	8.288	22	5 18 50.29	2.5257	18 20 0.3	3.907
23	3 26 20.35	2.2555	13 24 19.4	8.225	23	5 21 21.98	2.5306	18 23 51.2	3.787
24	3 28 35.85	2.2613	N. 13 32 31.0	8.161	24	5 23 53.96	2.5355	N. 18 27 34.8	3.665

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
FRIDAY 17.					SUNDAY 19.				
0	^h 5 ^m 23 ^s 53.96	2.8356	N.18° 27' 34.8	3.665	0	^h 7 ^m 29 ^s 28.23	2.6645	N.18° 49' 14.6	2.931
1	5 26 26.24	2.8403	18 31 11.1	3.543	1	7 32 7.49	2.6641	18 46 14.4	3.073
2	5 28 58.80	2.8461	18 34 40.0	3.490	2	7 34 46.72	2.6636	18 43 5.8	3.216
3	5 31 31.65	2.8498	18 38 1.5	3.297	3	7 37 25.92	2.6610	18 39 48.7	3.356
4	5 34 4.77	2.8543	18 41 15.6	3.173	4	7 40 5.08	2.6623	18 36 23.1	3.496
5	5 36 38.16	2.8588	18 44 22.1	3.045	5	7 42 44.20	2.6618	18 32 49.1	3.636
6	5 39 11.82	2.8632	18 47 21.0	2.918	6	7 45 23.26	2.6605	18 29 6.8	3.776
7	5 41 45.75	2.8676	18 50 12.2	2.790	7	7 48 2.26	2.6494	18 25 16.1	3.915
8	5 44 19.93	2.8718	18 52 55.8	2.661	8	7 50 41.19	2.6482	18 21 17.0	4.053
9	5 46 54.36	2.8759	18 55 31.6	2.531	9	7 53 20.04	2.6469	18 17 9.7	4.191
10	5 49 29.04	2.8800	18 57 59.5	2.400	10	7 55 58.82	2.6456	18 12 54.1	4.328
11	5 52 3.96	2.8840	19 0 19.6	2.268	11	7 58 37.51	2.6441	18 8 30.3	4.465
12	5 54 39.12	2.8879	19 2 31.7	2.136	12	8 1 16.11	2.6425	18 3 58.3	4.601
13	5 57 14.51	2.8918	19 4 35.9	2.003	13	8 3 54.61	2.6407	17 59 18.2	4.737
14	5 59 50.13	2.8955	19 6 32.1	1.869	14	8 6 32.99	2.6388	17 54 29.9	4.871
15	6 2 25.97	2.8990	19 8 20.2	1.734	15	8 9 11.26	2.6368	17 49 33.6	5.004
16	6 5 2.01	2.9026	19 10 0.2	1.599	16	8 11 49.41	2.6347	17 44 29.4	5.137
17	6 7 38.26	2.9059	19 11 32.1	1.463	17	8 14 27.43	2.6326	17 39 17.2	5.269
18	6 10 14.72	2.9092	19 12 55.8	1.326	18	8 17 5.32	2.6303	17 33 57.1	5.400
19	6 12 51.37	2.9124	19 14 11.3	1.189	19	8 19 43.07	2.6279	17 28 29.1	5.531
20	6 15 28.21	2.9156	19 15 18.5	1.051	20	8 22 20.67	2.6254	17 22 53.4	5.660
21	6 18 5.23	2.9186	19 16 17.4	0.913	21	8 24 58.12	2.6229	17 17 9.9	5.788
22	6 20 42.43	2.9214	19 17 8.0	0.774	22	8 27 35.42	2.6203	17 11 18.8	5.915
23	6 23 19.80	2.9241	N.19 17 50.2	0.634	23	8 30 12.56	2.6176	N.17 5 20.0	6.042
SATURDAY 18.					MONDAY 20.				
0	6 25 57.32	2.9267	N.19 18 24.1	0.494	0	8 32 49.53	2.6147	N.16 59 13.7	6.169
1	6 28 35.00	2.9293	19 18 49.6	0.354	1	8 35 26.32	2.6118	16 52 59.9	6.292
2	6 31 12.84	2.9317	19 19 6.6	0.213	2	8 38 2.94	2.6088	16 46 38.7	6.415
3	6 33 50.82	2.9340	19 19 15.2	0.073	3	8 40 39.38	2.6058	16 40 10.2	6.537
4	6 36 28.92	2.9362	19 19 15.2	0.070	4	8 43 15.63	2.6026	16 33 34.3	6.656
5	6 39 7.15	2.9383	19 19 6.7	0.212	5	8 45 51.69	2.5993	16 26 51.2	6.778
6	6 41 45.51	2.9402	19 18 49.7	0.354	6	8 48 27.55	2.5960	16 20 0.9	6.896
7	6 44 23.98	2.9420	19 18 24.2	0.497	7	8 51 3.21	2.5926	16 13 3.6	7.013
8	6 47 2.55	2.9437	19 17 50.1	0.640	8	8 53 38.66	2.5891	16 5 59.3	7.129
9	6 49 41.22	2.9453	19 17 7.4	0.783	9	8 56 13.90	2.5856	15 58 48.0	7.245
10	6 52 19.99	2.9468	19 16 16.1	0.926	10	8 58 48.93	2.5820	15 51 29.9	7.360
11	6 54 58.84	2.9482	19 15 16.2	1.070	11	9 1 23.74	2.5783	15 44 5.0	7.471
12	6 57 37.77	2.9494	19 14 7.7	1.213	12	9 3 58.33	2.5745	15 36 33.4	7.582
13	7 0 16.77	2.9504	19 12 50.6	1.357	13	9 6 32.69	2.5707	15 28 55.2	7.692
14	7 2 55.82	2.9514	19 11 24.9	1.500	14	9 9 6.82	2.5668	15 21 10.4	7.800
15	7 5 34.93	2.9523	19 9 50.6	1.644	15	9 11 40.71	2.5629	15 13 19.2	7.907
16	7 8 14.10	2.9531	19 8 7.6	1.787	16	9 14 14.37	2.5589	15 5 21.6	8.013
17	7 10 53.31	2.9537	19 6 16.0	1.931	17	9 16 47.79	2.5549	14 57 17.7	8.117
18	7 13 32.54	2.9543	19 4 15.9	2.074	18	9 19 20.96	2.5508	14 49 7.6	8.230
19	7 16 11.80	2.9548	19 2 7.2	2.218	19	9 21 53.88	2.5466	14 40 51.3	8.323
20	7 18 51.08	2.9547	18 59 49.8	2.361	20	9 24 26.55	2.5424	14 32 29.0	8.423
21	7 21 30.37	2.9548	18 57 23.8	2.504	21	9 26 58.97	2.5382	14 24 0.7	8.520
22	7 24 9.66	2.9548	18 54 49.3	2.647	22	9 29 31.13	2.5340	14 15 26.6	8.617
23	7 26 48.95	2.9548	18 52 6.2	2.789	23	9 32 3.04	2.5297	14 6 46.7	8.713
24	7 29 28.23	2.9545	N.18 49 14.6	2.931	24	9 34 34.69	2.5253	N.13 58 1.1	8.807

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
TUESDAY 21.					THURSDAY 23.				
0	9 34 34.69	2.5283	N. 13° 58' 1.1"	8.807	0	11 30 30.17	2.3077	N. 5° 35' 51.0"	11.528
1	9 37 6.07	2.5308	13 49 9.9	8.900	1	11 32 48.51	2.3036	5 24 18.7	11.448
2	9 39 37.19	2.5164	13 40 13.1	8.991	2	11 35 6.60	2.2996	5 12 45.2	11.567
3	9 42 8.04	2.5119	13 31 10.9	9.081	3	11 37 24.45	2.2966	5 1 10.6	11.685
4	9 44 38.62	2.5074	13 22 3.4	9.169	4	11 39 42.07	2.2916	4 49 35.0	11.801
5	9 47 8.93	2.5029	13 12 50.6	9.266	5	11 41 59.45	2.2877	4 37 58.5	11.916
6	9 49 38.97	2.4984	13 3 32.7	9.341	6	11 44 16.60	2.2838	4 26 21.1	11.929
7	9 52 8.74	2.4988	12 54 9.7	9.426	7	11 46 33.52	2.2800	4 14 43.0	11.641
8	9 54 38.23	2.4992	12 44 41.7	9.507	8	11 48 50.20	2.2762	4 3 4.2	11.682
9	9 57 7.44	2.4846	12 35 8.8	9.587	9	11 51 6.66	2.2724	3 51 24.8	11.661
10	9 59 36.38	2.4800	12 25 31.2	9.668	10	11 53 22.89	2.2687	3 39 44.9	11.689
11	10 2 5.04	2.4753	12 15 48.9	9.743	11	11 55 38.90	2.2651	3 28 4.5	11.676
12	10 4 33.42	2.4707	12 6 2.0	9.819	12	11 57 54.70	2.2614	3 16 23.8	11.682
13	10 7 1.52	2.4660	11 56 10.6	9.894	13	12 0 10.28	2.2578	3 4 42.8	11.686
14	10 9 29.34	2.4613	11 46 14.7	9.967	14	12 2 25.64	2.2543	2 53 1.5	11.689
15	10 11 56.88	2.4566	11 36 14.5	10.038	15	12 4 40.79	2.2508	2 41 20.1	11.691
16	10 14 24.13	2.4519	11 26 10.1	10.108	16	12 6 55.74	2.2474	2 29 38.6	11.691
17	10 16 51.11	2.4473	11 16 1.5	10.177	17	12 9 10.48	2.2440	2 17 57.2	11.690
18	10 19 17.80	2.4425	11 5 48.9	10.243	18	12 11 25.02	2.2406	2 6 15.8	11.688
19	10 21 44.21	2.4378	10 55 32.3	10.308	19	12 13 39.36	2.2373	1 54 34.6	11.686
20	10 24 10.33	2.4331	10 45 11.9	10.371	20	12 15 53.50	2.2340	1 42 53.6	11.681
21	10 26 36.17	2.4284	10 34 47.7	10.433	21	12 18 7.45	2.2308	1 31 12.9	11.676
22	10 29 1.74	2.4237	10 24 19.9	10.493	22	12 20 21.20	2.2277	1 19 32.5	11.669
23	10 31 27.03	2.4191	N. 10° 13' 48.5"	10.552	23	12 22 34.77	2.2246	N. 1 7 52.6	11.661
WEDNESDAY 22.					FRIDAY 24.				
0	10 33 52.03	2.4144	N. 10° 3' 13.6"	10.610	0	12 24 48.15	2.2215	N. 0° 56' 13.2"	11.662
1	10 36 16.75	2.4097	9 52 35.3	10.666	1	12 27 1.35	2.2186	0 44 34.3	11.642
2	10 38 41.19	2.4050	9 41 53.7	10.720	2	12 29 14.37	2.2156	0 32 56.1	11.631
3	10 41 5.35	2.4003	9 31 8.9	10.772	3	12 31 27.21	2.2126	0 21 18.6	11.618
4	10 43 29.23	2.3957	9 20 21.1	10.823	4	12 33 39.88	2.2097	N. 0 9 41.9	11.606
5	10 45 52.83	2.3911	9 9 30.2	10.873	5	12 35 52.38	2.2069	S. 0 1 54.0	11.691
6	10 48 16.16	2.3864	8 58 36.4	10.921	6	12 38 4.71	2.2041	0 13 29.0	11.678
7	10 50 39.21	2.3818	8 47 39.8	10.967	7	12 40 16.88	2.2014	0 25 3.0	11.666
8	10 53 1.98	2.3773	8 36 40.4	11.012	8	12 42 28.88	2.1988	0 36 36.0	11.641
9	10 55 24.48	2.3728	8 25 38.4	11.056	9	12 44 40.73	2.1962	0 48 7.9	11.623
10	10 57 46.71	2.3683	8 14 33.8	11.097	10	12 46 52.42	2.1936	0 59 38.7	11.603
11	11 0 8.67	2.3638	8 3 26.7	11.137	11	12 49 3.96	2.1910	1 11 8.3	11.488
12	11 2 30.36	2.3593	7 52 17.3	11.176	12	12 51 15.34	2.1886	1 22 36.6	11.461
13	11 4 51.78	2.3548	7 41 5.6	11.213	13	12 53 26.58	2.1861	1 34 3.6	11.436
14	11 7 12.93	2.3503	7 29 51.7	11.249	14	12 55 37.67	2.1837	1 45 29.1	11.414
15	11 9 33.82	2.3459	7 18 35.7	11.284	15	12 57 48.62	2.1813	1 56 53.2	11.388
16	11 11 54.44	2.3415	7 7 17.6	11.317	16	12 59 59.43	2.1790	2 8 15.7	11.362
17	11 14 14.80	2.3372	6 55 57.6	11.348	17	13 2 10.11	2.1768	2 19 36.6	11.336
18	11 16 34.91	2.3329	6 44 35.8	11.378	18	13 4 20.65	2.1746	2 30 56.0	11.309
19	11 18 54.76	2.3286	6 33 12.2	11.407	19	13 6 31.06	2.1726	2 42 13.7	11.280
20	11 21 14.34	2.3243	6 21 47.0	11.434	20	13 8 41.35	2.1704	2 53 29.6	11.250
21	11 23 33.67	2.3201	6 10 20.2	11.460	21	13 10 51.51	2.1683	3 4 43.7	11.219
22	11 25 52.75	2.3159	5 58 51.8	11.484	22	13 13 1.55	2.1663	3 15 55.9	11.188
23	11 28 11.58	2.3118	5 47 22.0	11.507	23	13 15 11.47	2.1643	3 27 6.2	11.166
24	11 30 30.17	2.3077	N. 5° 35' 51.0"	11.528	24	13 17 21.27	2.1624	S. 3 38 14.6	11.123

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
-------	------------------	-------------------	--------------	-------------------	-------	------------------	-------------------	--------------	-------------------

SATURDAY 25.

0	13 17 21.27	2.1694	S. 3 38 14.6	11.123
1	13 19 30.96	2.1696	3 49 21.0	11.098
2	13 21 40.54	2.1698	4 0 25.2	11.063
3	13 23 50.02	2.1671	4 11 27.3	11.018
4	13 25 59.39	2.1654	4 22 27.3	10.961
5	13 28 8.66	2.1637	4 33 25.1	10.944
6	13 30 17.83	2.1620	4 44 20.6	10.905
7	13 32 26.90	2.1604	4 55 13.7	10.866
8	13 34 35.88	2.1489	5 6 4.5	10.826
9	13 36 44.77	2.1474	5 16 52.8	10.785
10	13 38 53.57	2.1460	5 27 38.7	10.743
11	13 41 2.29	2.1446	5 38 22.1	10.701
12	13 43 10.92	2.1432	5 49 2.8	10.667
13	13 45 19.47	2.1419	5 59 40.9	10.613
14	13 47 27.95	2.1406	6 10 16.4	10.568
15	13 49 36.35	2.1394	6 20 49.2	10.523
16	13 51 44.68	2.1382	6 31 19.2	10.476
17	13 53 52.94	2.1371	6 41 46.4	10.429
18	13 56 1.13	2.1360	6 52 10.7	10.381
19	13 58 9.26	2.1349	7 2 32.1	10.332
20	14 0 17.32	2.1339	7 12 50.6	10.283
21	14 2 25.32	2.1329	7 23 6.1	10.233
22	14 4 33.27	2.1320	7 33 18.6	10.183
23	14 6 41.16	2.1311	S. 7 43 28.0	10.131

MONDAY 27.

0	14 59 46.82	2.1198	S. 11 38 48.9	6.632
1	15 1 54.01	2.1198	11 47 24.8	6.564
2	15 4 1.19	2.1197	11 55 56.6	6.496
3	15 6 8.37	2.1197	12 4 24.3	6.428
4	15 8 15.55	2.1197	12 12 48.0	6.360
5	15 10 22.73	2.1197	12 21 7.5	6.292
6	15 12 29.92	2.1197	12 29 22.7	6.219
7	15 14 37.11	2.1196	12 37 33.7	6.148
8	15 16 44.30	2.1196	12 45 40.4	6.076
9	15 18 51.49	2.1196	12 53 42.8	6.004
10	15 20 58.69	2.1200	13 1 40.9	5.932
11	15 23 5.90	2.1202	13 9 34.7	5.860
12	15 25 13.11	2.1203	13 17 24.1	5.788
13	15 27 20.33	2.1205	13 25 9.1	5.712
14	15 29 27.57	2.1207	13 32 49.6	5.638
15	15 31 34.82	2.1209	13 40 25.6	5.563
16	15 33 42.08	2.1211	13 47 57.2	5.488
17	15 35 49.36	2.1214	13 55 24.3	5.413
18	15 37 56.65	2.1216	14 2 46.8	5.337
19	15 40 3.96	2.1219	14 10 4.7	5.261
20	15 42 11.28	2.1222	14 17 18.1	5.184
21	15 44 18.62	2.1226	14 24 26.8	5.106
22	15 46 25.98	2.1227	14 31 30.8	5.028
23	15 48 33.35	2.1230	S. 14 38 30.2	6.960

SUNDAY 26.

0	14 8 49.00	2.1802	S. 7 53 34.3	10.079
1	14 10 56.79	2.1294	8 3 37.5	10.026
2	14 13 4.53	2.1286	8 13 37.4	9.972
3	14 15 12.22	2.1278	8 23 34.1	9.918
4	14 17 19.87	2.1271	8 33 27.5	9.863
5	14 19 27.48	2.1265	8 43 17.6	9.808
6	14 21 35.05	2.1258	8 53 4.4	9.751
7	14 23 42.58	2.1252	9 2 47.8	9.694
8	14 25 50.08	2.1246	9 12 27.7	9.636
9	14 27 57.54	2.1241	9 22 4.2	9.578
10	14 30 4.97	2.1236	9 31 37.1	9.519
11	14 32 12.37	2.1232	9 41 6.5	9.460
12	14 34 19.75	2.1227	9 50 32.3	9.400
13	14 36 27.10	2.1223	9 59 54.5	9.339
14	14 38 34.43	2.1219	10 9 13.0	9.278
15	14 40 41.73	2.1216	10 18 27.8	9.216
16	14 42 49.02	2.1213	10 27 38.9	9.153
17	14 44 56.29	2.1210	10 36 46.2	9.090
18	14 47 3.54	2.1208	10 45 49.7	9.026
19	14 49 10.78	2.1206	10 54 49.4	8.962
20	14 51 18.01	2.1204	11 3 45.2	8.897
21	14 53 25.23	2.1202	11 12 37.1	8.832
22	14 55 32.43	2.1200	11 21 25.0	8.766
23	14 57 39.63	2.1199	11 30 9.0	8.699
24	14 59 46.82	2.1198	S. 11 38 48.9	8.632

TUESDAY 28.

0	15 50 40.74	2.1223	S. 14 45 24.8	6.872
1	15 52 48.15	2.1237	14 52 14.7	6.793
2	15 54 55.59	2.1240	14 58 59.9	6.713
3	15 57 3.04	2.1243	15 5 40.3	6.633
4	15 59 10.51	2.1246	15 12 15.9	6.553
5	16 1 18.00	2.1250	15 18 46.6	6.472
6	16 3 25.51	2.1253	15 25 12.5	6.391
7	16 5 33.04	2.1257	15 31 33.5	6.309
8	16 7 40.60	2.1260	15 37 49.6	6.228
9	16 9 48.18	2.1264	15 44 0.8	6.146
10	16 11 55.77	2.1267	15 50 7.1	6.064
11	16 14 3.38	2.1271	15 56 8.4	5.981
12	16 16 11.02	2.1274	16 2 4.8	5.897
13	16 18 18.68	2.1278	16 7 56.1	5.813
14	16 20 26.36	2.1281	16 13 42.4	5.730
15	16 22 34.06	2.1285	16 19 23.7	5.646
16	16 24 41.78	2.1288	16 24 59.9	5.561
17	16 26 49.52	2.1292	16 30 31.0	5.476
18	16 28 57.29	2.1295	16 35 57.0	5.391
19	16 31 5.08	2.1299	16 41 17.9	5.305
20	16 33 12.88	2.1302	16 46 33.6	5.219
21	16 35 20.70	2.1306	16 51 44.2	5.133
22	16 37 28.55	2.1309	16 56 49.6	5.047
23	16 39 36.42	2.1312	17 1 49.9	4.961
24	16 41 44.30	2.1315	S. 17 6 44.9	4.874

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
-------	------------------	-------------------	--------------	-------------------	-------	------------------	-------------------	--------------	-------------------

WEDNESDAY 29.

0	16 41 44.30	2.1316	8.17 6 41.9	4.674
1	16 43 52.20	2.1316	17 11 34.7	4.705
2	16 46 0.12	2.1321	17 16 19.2	4.690
3	16 48 8.06	2.1324	17 20 58.5	4.611
4	16 50 16.01	2.1327	17 25 32.5	4.603
5	16 52 23.98	2.1329	17 30 1.3	4.635
6	16 54 31.96	2.1332	17 34 24.7	4.647
7	16 56 39.96	2.1334	17 38 42.8	4.606
8	16 58 47.97	2.1336	17 42 55.6	4.160
9	17 0 56.00	2.1338	17 47 3.0	4.079
10	17 2 4.03	2.1340	17 51 5.1	2.980
11	17 5 12.07	2.1342	17 55 1.8	2.891
12	17 7 20.13	2.1344	17 58 53.2	2.611
13	17 9 28.20	2.1346	18 2 39.2	2.781
14	17 11 36.27	2.1347	18 6 19.7	2.631
15	17 13 44.35	2.1348	18 9 54.8	2.640
16	17 15 52.44	2.1349	18 13 24.5	2.649
17	17 18 0.54	2.1350	18 16 48.7	2.646
18	17 20 8.64	2.1351	18 20 7.5	2.908
19	17 22 16.74	2.1351	18 23 20.8	2.177
20	17 24 24.85	2.1352	18 26 26.7	2.606
21	17 26 32.96	2.1352	18 29 31.1	2.994
22	17 28 41.07	2.1352	18 32 28.0	2.908
23	17 30 49.18	2.1351	8.18 35 19.4	2.611

THURSDAY 30.

0	17 32 57.28	2.1351	8.18 38 5.3	2.720
1	17 35 5.38	2.1350	18 40 45.7	2.628
2	17 37 13.48	2.1349	18 43 20.6	2.606
3	17 39 21.57	2.1348	18 45 50.0	2.644
4	17 41 29.65	2.1346	18 48 13.9	2.903
5	17 43 37.72	2.1344	18 50 32.2	2.909
6	17 45 45.78	2.1342	18 52 44.9	2.167
7	17 47 53.83	2.1340	18 54 52.1	2.074
8	17 50 1.86	2.1338	18 56 53.8	1.992
9	17 52 9.88	2.1336	18 58 50.0	1.990
10	17 54 17.89	2.1332	19 0 40.6	1.798
11	17 56 25.88	2.1329	19 2 25.7	1.705
12	17 58 33.85	2.1327	19 4 5.2	1.612
13	18 0 41.80	2.1323	19 5 39.1	1.519
14	18 2 49.73	2.1319	19 7 7.5	1.427
15	18 4 57.63	2.1316	19 8 30.2	1.334
16	18 7 5.51	2.1312	19 9 47.6	1.242
17	18 9 13.36	2.1308	19 10 59.2	1.149
18	18 11 21.18	2.1301	19 12 5.5	1.056
19	18 13 28.97	2.1296	19 13 6.1	0.963
20	18 15 36.73	2.1291	19 14 1.1	0.871
21	18 17 44.46	2.1285	19 14 50.6	0.779
22	18 19 52.15	2.1279	19 15 34.6	0.687
23	18 21 59.81	2.1272	19 16 13.0	0.594
24	18 24 7.43	2.1267	8.19 16 45.9	0.502

FRIDAY 31.

0	18 24 7.43	2.1267	8.19 16 45.9	0.502
1	18 26 15.01	2.1266	19 17 13.2	0.409
2	18 28 22.55	2.1265	19 17 35.0	0.317
3	18 30 30.04	2.1265	19 17 51.3	0.226
4	18 32 37.49	2.1266	19 18 2.0	0.133
5	18 34 44.89	2.1266	19 18 7.2	0.041
6	18 36 52.25	2.1223	19 18 6.9	0.051
7	18 38 59.56	2.1213	19 18 1.1	0.143
8	18 41 6.81	2.1208	19 17 49.7	0.226
9	18 43 14.01	2.1195	19 17 32.8	0.237
10	18 45 21.16	2.1187	19 17 10.5	0.418
11	18 47 28.25	2.1178	19 16 42.8	0.508
12	18 49 35.29	2.1168	19 16 9.6	0.599
13	18 51 42.27	2.1160	19 15 30.9	0.691
14	18 53 49.18	2.1149	19 14 46.7	0.782
15	18 55 56.03	2.1137	19 13 57.1	0.878
16	18 58 2.82	2.1126	19 13 2.0	0.963
17	19 0 9.54	2.1114	19 12 1.5	1.053
18	19 2 16.19	2.1102	19 10 55.6	1.143
19	19 4 22.77	2.1091	19 9 44.3	1.233
20	19 6 29.28	2.1080	19 8 27.6	1.323
21	19 8 35.72	2.1068	19 7 5.6	1.412
22	19 10 42.09	2.1056	19 5 38.2	1.501
23	19 12 48.38	2.1045	8.19 4 5.5	1.590

SATURDAY, AUGUST 1.

0	19 14 54.60	2.1030	8.19 2 27.4	1.679
---	-------------	--------	-------------	-------

PHASES OF THE MOON.

○	Full Moon, . . .	d	h	m
○	Last Quarter, . . .	4	8	39.4
●	New Moon, . . .	12	12	40.2
☾	First Quarter, . . .	19	9	56.3
☾		26	1	51.5

☾	Apogee,	d	h
☾	Perigee,	7	5.3
		20	0.8

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Dist.	IIIh.	P. L. of Dist.	VIh.	P. L. of Dist.	IXh.	P. L. of Dist.
1	Spica W.	40° 15' 4"	2873	41° 47' 59"	2877	43° 20' 47"	2883	44° 53' 28"	2887
	α Aquilæ E.	59 58 16	2814	58 38 7	2846	57 18 34	2861	55 59 39	2818
	Fomalhaut E.	92 10 11	3099	90 42 0	3107	89 13 59	3115	87 46 8	3124
	α Pegasi E.	106 57 24	3153	105 30 19	3156	104 3 17	3160	102 36 20	3164
2	Spica W.	52 35 11	2916	54 7 10	2923	55 39 1	2927	57 10 45	2934
	α Aquilæ E.	49 35 48	2842	48 21 29	2898	47 8 7	2907	45 55 45	2923
	Fomalhaut E.	80 29 37	3173	79 2 54	3183	77 36 24	3193	76 10 7	3204
	α Pegasi E.	95 22 59	3191	93 56 39	3197	92 30 26	3204	91 4 21	3211
	Jupiter E.	118 27 30	2915	116 55 30	2923	115 23 39	2929	113 51 57	2936
3	Spica W.	64 47 31	2963	66 18 30	2969	67 49 22	2974	69 20 7	2980
	Saturn W.	26 49 33	2945	28 20 55	2949	29 52 12	2953	31 23 24	2958
	Fomalhaut E.	69 2 9	3206	67 37 18	3200	66 12 43	3204	64 48 25	3210
	α Pegasi E.	83 56 7	3249	82 30 56	3259	81 5 56	3268	79 41 7	3276
	Jupiter E.	106 15 37	2909	104 44 46	2916	103 14 3	2922	101 43 28	2928
4	Spica W.	76 52 7	3007	78 22 11	3013	79 52 8	3018	81 21 59	3023
	Saturn W.	38 57 59	2980	40 28 37	2985	41 59 9	2989	43 29 36	2993
	Antares W.	31 51 34	3198	33 17 45	3199	34 44 9	3178	36 10 44	3171
	Fomalhaut E.	57 51 34	3396	56 29 13	3417	55 7 16	3438	53 45 43	3462
	α Pegasi E.	72 39 51	3329	71 16 13	3349	69 52 50	3364	68 29 41	3367
	Jupiter E.	94 12 22	3017	92 42 30	3023	91 12 45	3028	89 43 7	3033
5	Spica W.	88 49 40	3047	90 18 55	3061	91 48 5	3066	93 17 9	3069
	Saturn W.	51 0 24	3016	52 30 17	3019	54 0 6	3023	55 29 50	3027
	Antares W.	43 25 28	3148	44 52 39	3147	46 19 52	3146	47 47 7	3144
	Fomalhaut E.	47 4 54	3600	45 46 20	3636	44 28 25	3674	43 11 10	3714
	α Pegasi E.	61 37 51	3441	60 16 21	3459	58 55 11	3477	57 34 21	3496
	Jupiter E.	82 16 28	3067	80 47 26	3061	79 18 29	3065	77 49 37	3069
	α Arietis E.	104 18 9	3176	102 51 30	3178	101 24 55	3181	99 58 23	3183
6	Spica W.	100 41 17	3078	102 9 53	3082	103 38 25	3086	105 6 53	3088
	Saturn W.	62 57 21	3044	64 26 39	3047	65 55 54	3050	67 25 5	3052
	Antares W.	55 3 37	3143	56 30 56	3143	57 58 15	3143	59 25 34	3141
	α Pegasi E.	50 55 57	3612	49 37 36	3641	48 19 46	3672	47 2 29	3704
	Jupiter E.	70 26 28	3067	68 58 3	3090	67 29 41	3092	66 1 22	3096
	α Arietis E.	92 46 31	3198	91 20 19	3200	89 54 10	3204	88 28 5	3206
7	Saturn W.	74 50 20	3061	76 19 17	3063	77 48 12	3064	79 17 6	3065
	Antares W.	66 42 10	3143	68 9 29	3142	69 36 48	3141	71 4 8	3140
	Jupiter E.	58 40 34	3106	57 12 31	3106	55 44 29	3106	54 16 29	3109
	α Arietis E.	81 18 29	3230	79 52 43	3232	78 27 0	3235	77 1 20	3238
	Mars E.	109 48 20	3363	108 25 10	3364	107 2 1	3365	105 38 53	3366
8	Saturn W.	86 41 28	3064	88 10 22	3064	89 39 16	3063	91 8 12	3060
	Antares W.	78 21 0	3136	79 48 26	3134	81 15 54	3132	82 43 25	3130
	α Aquilæ W.	38 34 31	4840	39 36 21	4843	40 39 35	4855	41 44 7	4873
	Jupiter E.	46 56 37	3109	45 28 38	3109	44 0 39	3107	42 32 38	3105
	α Arietis E.	69 53 51	3241	68 28 30	3243	67 3 12	3246	65 37 57	3247
	Mars E.	98 43 14	3364	97 20 5	3362	95 56 54	3361	94 33 41	3363
	Aldebaran E.	101 39 8	3072	100 10 24	3070	98 41 38	3069	97 12 51	3066
9	Saturn W.	98 33 31	3047	100 2 45	3044	101 32 3	3040	103 1 26	3036
	Antares W.	90 1 41	3116	91 29 31	3112	92 57 26	3109	94 25 25	3106

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Dist.	XVh.	P. L. of Dist.	XVIIIh.	P. L. of Dist.	XXIh.	P. L. of Dist.
1	Spica W.	46° 26' 3"	3093	47° 58' 31"	3099	49° 30' 51"	3096	51° 3' 4"	3099
	α Aquilæ E.	54 41 24	3097	53 23 51	3098	52 7 2	3143	50 51 0	3791
	Fomalhaut E.	86 18 27	3133	84 50 57	3143	83 23 39	3162	81 56 32	3182
	α Pegasi E.	101 9 28	3169	99 42 42	3173	98 16 1	3178	96 49 26	3185
	Jupiter								
2	Spica W.	58 42 21	3099	60 13 50	3046	61 45 11	3051	63 16 25	2968
	α Aquilæ E.	44 44 27	4092	43 34 18	4109	42 25 23	4263	41 17 47	4346
	Fomalhaut E.	74 44 3	3216	73 18 13	3228	71 52 37	3241	70 27 16	3283
	α Pegasi E.	89 38 25	3216	88 12 37	3236	86 46 58	3283	85 21 28	3241
	Jupiter	112 20 24	3043	110 49 0	3060	109 17 44	3066	107 46 36	2963
3	Spica W.	70 50 45	3095	72 21 16	3091	73 51 40	3097	75 21 57	3092
	Saturn W.	32 54 30	3092	34 25 31	3096	35 56 26	3071	37 27 15	2975
	Fomalhaut E.	63 24 25	3335	62 0 43	3342	60 37 20	3360	59 14 17	3377
	α Pegasi E.	78 16 28	3296	76 52 0	3297	75 27 45	3307	74 3 42	3318
	Jupiter	100 13 0	3064	98 42 40	3099	97 12 27	3095	95 42 21	3011
4	Spica W.	82 51 43	3028	84 21 21	3033	85 50 53	3038	87 20 19	3043
	Saturn W.	44 59 57	3098	46 30 12	3093	48 0 22	3097	49 30 26	3012
	Antares W.	37 37 28	3164	39 4 20	3169	40 31 18	3165	41 58 21	3182
	Fomalhaut E.	52 24 36	3406	51 3 56	3411	49 43 44	3439	48 24 3	3468
	α Pegasi E.	67 6 47	3390	65 44 8	3394	64 21 45	3409	62 59 39	3426
5	Jupiter	88 13 35	3098	86 44 9	3043	85 14 50	3047	83 45 36	3052
	Spica W.	94 46 8	3064	96 15 2	3067	97 43 52	3071	99 12 37	3075
	Saturn W.	56 59 29	3081	58 29 3	3084	59 58 33	3088	61 27 59	3041
	Antares W.	49 14 23	3143	50 41 41	3143	52 8 59	3142	53 36 18	3142
	Fomalhaut E.	41 54 38	3760	40 38 53	3806	39 23 59	3881	38 10 0	3921
6	α Pegasi E.	56 13 52	3514	54 53 46	3536	53 34 4	3561	52 14 47	3586
	Jupiter	76 20 50	3073	74 52 8	3077	73 23 30	3081	71 54 57	3084
	α Arietis E.	98 31 53	3186	97 5 27	3189	95 39 5	3193	94 12 46	3195
	Spica W.	106 35 17	3091	108 3 38	3093	109 31 56	3095	111 0 10	3098
	Saturn W.	68 54 13	3055	70 23 18	3056	71 52 21	3059	73 21 21	3060
7	Antares W.	60 52 54	3143	62 20 13	3143	63 47 32	3142	65 14 51	3142
	α Pegasi E.	45 45 46	3740	44 29 41	3780	43 14 18	3823	41 59 39	3869
	Jupiter	64 33 7	3096	63 4 55	3101	61 36 46	3102	60 8 39	3104
	α Arietis E.	87 2 3	3209	85 36 5	3212	84 10 10	3214	82 44 18	3217
	Mars								
8	Saturn W.	80 45 59	3065	82 14 51	3065	83 43 43	3065	85 12 35	3065
	Antares W.	73 31 29	3140	73 58 50	3139	75 26 12	3138	76 53 35	3137
	Jupiter	52 48 30	3109	51 20 31	3110	49 52 33	3110	48 24 35	3110
	α Arietis E.	75 35 44	3281	74 10 11	3283	72 44 41	3286	71 19 14	3289
	Mars	104 15 45	3365	102 52 37	3365	101 29 30	3365	100 6 22	3365
9	Saturn W.	92 37 11	3068	94 6 12	3065	95 35 15	3064	97 4 21	3061
	Antares W.	84 10 58	3138	85 38 34	3136	87 6 13	3133	88 33 55	3119
	α Aquilæ W.	42 49 53	4300	43 56 46	4393	45 4 42	4469	46 13 37	4413
	Jupiter	41 4 35	3108	39 36 31	3102	38 8 24	3100	36 40 14	3096
	α Arietis E.	64 12 44	3280	62 47 34	3268	61 22 28	3265	59 57 25	3269
9	Mars	93 10 26	3346	91 47 8	3345	90 23 48	3342	89 0 25	3338
	Aldebaran E.	95 44 2	3066	94 15 11	3063	92 46 16	3060	91 17 18	3056
9	Saturn W.	104 30 54	3081	106 0 28	3096	107 30 8	3021	108 59 55	3015
	Antares W.	95 53 29	3100	97 21 39	3095	98 49 54	3091	100 18 15	3085

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of DIST.	III.	P. L. of DIST.	VI.	P. L. of DIST.	IX.	P. L. of DIST.
9	♈ Aquilæ W.	47° 23' 27"	2000	48° 34' 8"	2000	49° 45' 36"	2004	50° 57' 56"	2022
	Jupiter E.	35 12 2	2000	32 43 47	2000	32 15 26	2000	30 47 5	2007
	♈ Arietis E.	58 32 26	2000	57 7 31	2000	55 42 39	2000	54 17 51	2074
	Mars E.	87 38 57	2000	86 13 25	2000	84 49 40	2000	83 26 8	2022
	Aldebaran E.	89 48 17	2004	88 19 11	2001	86 50 1	2047	85 20 46	2043
	Sun E.	129 25 18	2000	128 3 30	2000	126 41 48	2037	125 19 58	2016
10	♈ Aquilæ W.	57 9 4	2000	58 25 4	2000	59 41 36	2000	60 56 38	2046
	♈ Arietis E.	47 15 19	2000	45 51 19	2001	44 27 11	2000	43 2 22	2022
	Mars E.	76 23 14	2000	75 1 54	2000	73 37 26	2000	72 12 48	2070
	Aldebaran E.	77 53 0	2014	76 23 5	2008	74 53 2	2001	73 22 50	2008
	Sun E.	119 28 51	2000	117 6 16	2000	115 43 31	2007	114 20 37	2066
11	♈ Aquilæ W.	67 30 40	2000	68 50 38	2000	70 10 40	2000	71 31 12	2072
	Fomalhaut W.	34 17 23	2000	35 22 28	2000	36 43 0	2000	37 57 50	2043
	♈ Arietis E.	36 8 19	2000	34 46 25	2000	33 25 1	2000	32 4 12	2018
	Mars E.	65 7 19	2000	63 41 40	2000	62 15 49	2004	60 49 45	2094
	Aldebaran E.	66 48 18	2000	64 17 58	2000	62 48 38	2000	61 14 47	2018
	Sun E.	107 23 38	2000	105 58 32	2000	104 35 20	2000	103 10 56	2076
12	♈ Aquilæ W.	78 19 31	2000	78 42 16	2000	81 5 22	2000	82 26 49	2021
	Fomalhaut W.	44 28 36	2000	45 40 37	2000	47 11 28	2000	48 24 7	2041
	Aldebaran E.	53 22 38	2000	51 50 26	2000	50 25 56	2000	48 52 7	2018
	Mars E.	53 36 4	2134	52 8 36	2121	50 40 52	2108	49 12 52	2004
	Sun E.	96 5 7	2000	94 38 10	2000	93 12 56	2167	91 48 24	2167
13	♈ Aquilæ W.	80 30 50	2000	80 56 22	2000	82 22 4	2000	83 42 4	2108
	Fomalhaut W.	35 38 13	2000	37 5 1	2000	36 32 27	2108	36 0 36	2077
	♈ Pegasi W.	42 3 50	2000	40 24 18	2000	44 45 54	2000	46 8 32	2030
	Aldebaran E.	40 58 30	2000	39 22 47	2000	37 46 42	2000	36 10 16	2004
	Mars E.	41 48 37	2000	40 18 54	2000	38 46 32	2000	37 18 32	2001
	Sun E.	84 29 5	2000	83 0 37	2000	81 31 49	2001	80 2 39	2032
14	Fomalhaut W.	67 29 24	2000	68 6 50	2000	70 32 48	2000	72 5 17	2007
	♈ Pegasi W.	33 15 44	2116	34 43 42	2000	36 12 27	2000	37 41 56	2000
	Jupiter W.	26 23 30	2000	28 1 20	2000	20 39 36	2000	23 18 22	2008
	Aldebaran E.	26 2 29	2000	26 23 45	2000	24 44 36	2000	23 5 2	2054
	Mars E.	20 42 28	2000	20 16 25	2000	20 38 7	2000	20 5 36	2003
	Sun E.	72 31 8	2040	70 59 40	2020	69 27 47	2001	67 55 29	2001
15	Fomalhaut W.	79 53 20	2000	81 38 48	2000	83 6 45	2000	84 48 9	2002
	♈ Pegasi W.	65 19 46	2044	66 53 19	2000	68 27 27	2000	70 2 11	2003
	Jupiter W.	30 38 35	2000	41 20 19	2000	43 2 14	2000	44 44 36	2031
	Sun E.	66 7 42	2000	58 32 52	2000	56 57 35	2000	55 26 22	2023
16	Fomalhaut W.	92 51 38	2000	94 20 35	2000	96 9 58	2000	97 49 38	2043
	♈ Pegasi W.	78 4 16	2000	78 42 9	2000	81 20 35	2000	83 50 30	2000
	Jupiter W.	53 23 16	2000	55 8 21	2000	56 53 53	2000	58 38 49	2003
	♈ Arietis W.	34 36 2	2000	36 18 48	2000	37 46 47	2000	39 23 54	2033
	Sun E.	47 16 48	2000	45 38 20	2000	43 58 42	2000	42 26 32	2072
17	♈ Pegasi W.	91 20 28	2000	93 1 46	2000	94 43 28	2000	96 25 26	2046
	Jupiter W.	67 36 0	2000	69 24 28	2105	71 13 18	2170	73 2 31	2166
	♈ Arietis W.	47 43 50	2000	49 26 15	2000	51 9 20	2000	52 50 8	2006
	Sun E.	33 50 44	2000	32 17 15	2072	30 35 24	2000	28 53 12	2046

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of DIST.	XVth.	P. L. of DIST.	XVIIIth.	P. L. of DIST.	XXth.	P. L. of DIST.
9	♈ Aquilæ W.	52° 10' 50"	3000	53° 24' 28"	3000	54° 36' 44"	3000	55° 53' 37"	3070
	Jupiter E.	29 18 39	3000	27 50 8	3070	26 21 34	3070	24 52 54	3070
	♈ Arietis E.	52 50 9	3000	51 28 32	3000	50 4 1	3000	48 30 36	3000
	Mars E.	82 2 22	3017	80 38 30	3012	79 14 32	3006	77 50 27	3000
	Aldebaran E.	83 51 20	3000	82 22 0	3000	80 52 27	3000	79 22 47	3000
	SUN E.	123 57 50	3000	122 35 50	3000	121 13 38	3007	119 51 18	3001
10	♈ Aquilæ W.	63 16 10	3000	63 34 10	3000	64 52 36	3000	66 11 29	3000
	♈ Arietis E.	41 39 48	3045	40 16 28	3058	38 53 24	3076	37 30 40	3090
	Mars E.	70 48 3	3000	69 23 7	3000	67 58 2	3048	66 32 46	3000
	Aldebaran E.	71 52 28	3000	70 21 56	3071	68 51 14	3000	67 20 21	3000
	SUN E.	113 57 32	3000	111 34 19	3000	110 10 55	3000	108 47 20	3000
11	♈ Aquilæ W.	72 53 7	3000	74 13 25	3000	75 35 5	3018	76 57 7	3000
	Fomalhaut W.	39 13 50	3000	40 31 3	3000	41 49 16	3000	43 8 28	3010
	♈ Arietis E.	30 44 9	3000	28 24 56	3077	28 6 40	3000	26 49 34	3000
	Mars E.	59 28 29	3000	57 58 59	3073	56 30 15	3000	55 2 17	3000
	Aldebaran E.	59 42 51	3007	58 10 41	3004	56 38 15	3000	55 5 34	3001
	SUN E.	101 46 15	3000	100 23 23	3000	98 56 13	3007	97 30 47	3000
12	♈ Aquilæ W.	83 50 36	3000	85 16 43	3000	86 41 9	3073	88 5 54	3000
	Fomalhaut W.	49 57 31	3000	51 21 30	3000	52 46 30	3000	54 12 2	3000
	Aldebaran E.	47 18 2	3000	45 43 38	3000	44 8 55	3073	42 33 52	3000
	Mars E.	47 44 33	3000	46 16 1	3007	44 47 11	3000	43 18 3	3000
	SUN E.	90 19 36	3000	88 52 27	3000	87 24 50	3000	85 57 13	3000
13	♈ Aquilæ W.	95 14 21	3070	96 40 55	3000	98 7 45	3000	99 34 50	3000
	Fomalhaut W.	61 29 8	3000	62 58 21	3000	64 28 9	3000	65 58 30	3000
	♈ Pegasi W.	47 32 16	3000	48 56 44	3000	50 22 13	3000	51 48 34	3000
	Aldebaran E.	34 33 20	3000	32 58 18	3000	31 18 45	3000	29 40 49	3000
	Mars E.	35 47 58	3000	34 17 0	3007	32 45 40	3000	31 14 15	3000
	SUN E.	78 33 6	3014	77 3 11	3000	75 32 53	3077	74 2 12	3000
14	Fomalhaut W.	73 36 18	3000	75 11 49	3000	76 45 50	3000	78 20 20	3070
	♈ Pegasi W.	59 12 9	3000	60 43 4	3000	62 14 39	3000	63 46 54	3070
	Jupiter W.	32 57 34	3000	34 37 13	3000	36 17 19	3000	37 57 52	3010
	Aldebaran E.	21 23 5	3000	19 44 42	3000	18 3 54	3000	16 22 40	3000
	Mars E.	23 32 55	3070	22 0 6	3073	20 27 12	3073	18 54 18	3077
	SUN E.	66 22 46	3000	64 49 38	3000	63 16 5	3000	61 42 6	3000
15	Fomalhaut W.	86 19 50	3070	87 57 16	3000	89 34 50	3000	91 13 7	3017
	♈ Pegasi W.	71 37 20	3000	73 13 21	3073	74 48 46	3000	76 26 43	3000
	Jupiter W.	46 27 26	3013	48 10 43	3004	49 54 27	3070	51 38 38	3000
	SUN E.	53 45 42	3000	52 9 8	3000	50 38 6	3000	48 54 28	3000
16	Fomalhaut W.	99 29 38	3000	101 9 54	3000	102 50 29	3014	104 31 23	3000
	♈ Pegasi W.	84 38 50	3000	86 18 40	3000	87 50 53	3000	89 30 29	3010
	Jupiter W.	60 28 13	3000	62 13 3	3000	64 0 17	3000	65 47 56	3010
	♈ Arietis W.	41 2 4	3000	42 41 13	3000	44 21 16	3010	46 2 9	3000
	SUN E.	40 40 58	3000	38 0 50	3007	37 20 37	3000	35 30 52	3000
17	♈ Pegasi W.	98 7 41	3000	99 50 11	3000	101 32 55	3007	103 15 51	3000
	Jupiter W.	74 52 7	3000	76 42 4	3000	78 32 21	3010	80 22 58	3000
	♈ Arietis W.	54 37 32	3000	56 23 31	3000	58 8 2	3000	59 54 3	3070
	SUN E.	27 10 48	3000	25 27 55	3000	23 44 52	3010	22 1 35	3000

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of DM.	IIIh.	P. L. of DM.	VIh.	P. L. of DM.	IXh.	P. L. of DM.
21	SUN	W.	22° 29' 15"	2919	24° 14' 47"	2928	26° 0' 13"	2928	27° 45' 31"	2925
	Spica	E.	60 36 14	2046	58 43 51	2055	56 51 42	2064	54 59 47	2073
	Saturn	E.	97 46 42	2012	95 53 26	2076	94 0 20	2026	92 7 26	2033
22	SUN	W.	36 29 19	2280	38 13 22	2291	39 57 9	2403	41 40 39	2417
	Spica	E.	45 44 23	2126	43 54 19	2161	42 4 38	2168	40 15 22	2186
	Saturn	E.	82 46 22	2063	80 54 57	2096	79 3 51	2107	77 13 3	2120
	Antares	E.	91 38 36	2148	89 48 43	2166	87 59 8	2168	86 9 52	2180
23	SUN	W.	50 13 20	2468	51 54 50	2508	53 35 59	2619	55 16 46	2626
	Saturn	E.	68 4 6	2190	66 15 24	2206	64 27 4	2220	62 39 7	2237
	Antares	E.	77 8 34	2258	75 21 25	2289	73 34 40	2285	71 48 19	2292
24	SUN	W.	63 34 52	2621	65 13 19	2638	66 51 22	2656	68 29 1	2674
	Saturn	E.	53 45 23	2320	51 59 52	2356	50 14 45	2364	48 30 4	2371
	Antares	E.	63 2 53	2363	61 19 8	2412	59 35 50	2431	57 53 0	2461
	α Aquilæ	E.	109 30 59	2672	107 58 6	2680	106 25 21	2697	104 52 45	2694
25	SUN	W.	76 31 18	2763	78 6 34	2781	79 41 27	2798	81 15 57	2816
	Saturn	E.	39 52 56	2480	38 10 47	2478	36 29 3	2497	34 47 45	2516
	Antares	E.	49 26 6	2609	47 46 14	2681	46 6 53	2694	44 28 4	2699
	α Aquilæ	E.	97 12 43	2690	95 41 27	2683	94 10 28	2677	92 39 47	2666
26	SUN	W.	89 2 47	2902	90 35 3	2920	92 6 57	2956	93 38 31	2962
	Antares	E.	36 22 38	2766	34 47 26	2796	33 12 55	2832	31 39 9	2870
	α Aquilæ	E.	85 11 20	2676	83 42 43	2696	82 14 29	2716	80 46 38	2736
27	SUN	W.	101 11 18	3080	102 40 54	3044	104 10 12	3069	105 39 12	3073
	Spica	W.	24 55 42	2642	26 29 16	2640	28 2 52	2641	29 36 27	2643
	α Aquilæ	E.	73 33 40	2246	72 8 24	2269	70 43 35	2293	69 19 15	2319
	Fomalhaut	E.	106 53 14	3004	105 23 6	3012	103 53 8	3022	102 23 22	3032
28	SUN	W.	112 59 56	3140	114 27 17	3163	115 54 23	3164	117 21 15	3177
	Spica	W.	37 23 14	2668	38 56 14	2675	40 29 5	2682	42 1 47	2689
	α Aquilæ	E.	62 25 18	2461	61 4 10	2468	59 43 38	2476	58 23 43	2461
	Fomalhaut	E.	94 57 37	3063	93 29 6	3092	92 0 47	3108	90 32 41	3114
	α Pegasi	E.	109 37 0	3183	108 9 54	3166	106 42 55	3164	105 16 3	3169
29	Spica	W.	49 42 56	2926	51 14 42	2984	52 46 18	2941	54 17 45	2946
	α Aquilæ	E.	51 54 24	2769	50 38 50	2820	49 24 8	2872	48 10 20	2929
	Fomalhaut	E.	83 15 30	3170	81 48 45	3181	80 22 13	3188	78 55 55	3204
	α Pegasi	E.	96 3 30	3203	96 37 24	3209	95 11 26	3217	93 45 37	3226
30	Spica	W.	61 52 50	2981	63 23 26	2987	64 53 55	2998	66 24 17	2999
	Saturn	W.	24 37 5	2666	26 7 37	2668	27 38 5	2692	29 8 28	2696
	Fomalhaut	E.	71 47 59	2966	70 23 8	2980	68 58 33	2993	67 34 13	2996
	α Pegasi	E.	86 38 51	3266	85 13 58	3274	83 49 16	3282	82 24 44	3290
	Jupiter	E.	110 41 5	2966	109 9 57	2962	107 38 57	2969	106 8 6	2976
31	Spica	W.	73 54 18	2996	75 23 59	3030	76 53 34	3034	78 23 4	3039
	Saturn	W.	36 39 14	3016	38 9 8	3019	39 38 57	3023	41 8 41	3026
	Antares	W.	29 3 20	2962	30 28 16	2944	31 53 33	2941	33 19 6	2918
	Fomalhaut	E.	60 36 45	3264	59 14 10	3401	57 51 55	3490	56 30 1	3439
	α Pegasi	E.	75 24 40	2836	74 1 13	2849	72 37 58	2860	71 14 56	2871
	Jupiter	E.	96 35 42	3004	97 5 34	3009	95 35 32	3014	94 5 36	3018

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Dist.	XVh.	P. L. of Dist.	XVIIIh.	P. L. of Dist.	XXIh.	P. L. of Dist.
21	SUN	W.	29° 30' 40"	2349	31° 15' 39"	2350	33° 0' 26"	2350	34° 45' 0"	2350
	Spica	E.	53 8 6	2084	51 16 42	2096	49 25 36	2108	47 34 49	2129
	Saturn	E.	90 14 44	2043	88 22 16	2009	86 30 2	2002	84 38 4	2073
22	SUN	W.	43 23 50	2429	45 6 43	2443	46 49 16	2458	48 31 29	2473
	Spica	E.	38 26 32	2304	36 38 10	2325	34 50 19	2346	33 3 0	2308
	Saturn	E.	75 22 34	2153	73 32 25	2147	71 42 37	2161	69 53 10	2176
	Antares	E.	84 20 54	2193	82 32 16	2208	80 44 0	2223	78 56 6	2237
23	SUN	W.	56 57 9	2653	58 37 9	2669	60 16 47	2686	61 56 1	2698
	Saturn	E.	60 51 34	2253	59 4 25	2269	57 17 40	2285	55 31 19	2302
	Antares	E.	70 2 22	2320	68 16 51	2337	66 31 45	2354	64 47 5	2374
24	SUN	W.	70 6 16	2992	71 43 7	2710	73 19 34	2727	74 55 38	2745
	Saturn	E.	46 45 48	2889	45 1 57	2406	43 18 31	2424	41 35 31	2443
	Antares	E.	56 10 38	2473	54 28 45	2488	52 47 22	2515	51 6 29	2536
	α Aquilæ	E.	103 20 19	2904	101 48 5	2913	100 16 3	2924	98 44 15	2937
25	SUN	W.	82 50 4	2634	84 23 48	2651	85 57 10	2669	87 30 9	2686
	Saturn	E.	33 6 53	2834	31 26 27	2852	29 46 26	2871	28 6 51	2891
	Antares	E.	42 49 48	2654	41 12 6	2661	39 35 0	2707	37 58 30	2736
	α Aquilæ	E.	91 9 25	3009	89 39 23	3025	88 9 41	3043	86 40 20	3069
26	SUN	W.	95 9 44	2998	96 40 37	2984	98 11 10	2999	99 41 24	3014
	Antares	E.	30 6 12	2911	28 34 7	2906	27 2 59	2908	25 32 53	2901
	α Aquilæ	E.	79 19 12	3156	77 52 10	3178	76 25 34	3199	74 59 24	3221
27	SUN	W.	107 7 54	3087	108 36 19	3101	110 4 27	3114	111 32 19	3127
	Spica	W.	31 9 59	2946	32 43 27	2955	34 16 50	2965	35 50 6	2969
	α Aquilæ	E.	67 55 25	2945	66 32 5	2973	65 9 17	2400	63 47 1	3430
	Fomalhaut	E.	100 53 49	3045	99 24 28	3061	97 55 18	3061	96 26 21	3072
28	SUN	W.	118 47 52	3188	120 14 15	3199	121 40 25	3210	123 6 22	3221
	Spica	W.	43 34 20	2997	45 6 43	2904	46 38 57	2913	48 11 1	2919
	α Aquilæ	E.	57 4 26	2998	55 45 49	2938	54 27 56	2979	53 10 47	2723
	Fomalhaut	E.	89 4 48	3124	87 37 8	3136	86 9 42	3147	84 42 29	3156
	α Pegasi	E.	103 49 17	3176	102 22 39	3182	100 56 8	3198	99 29 45	3196
29	Spica	W.	55 49 3	2955	57 20 12	2992	58 51 13	2998	60 22 6	2975
	α Aquilæ	E.	46 57 30	2990	45 45 41	4086	44 34 58	4130	43 25 25	4206
	Fomalhaut	E.	77 29 51	3216	76 4 1	3229	74 38 26	3241	73 13 5	3253
	α Pegasi	E.	92 19 58	3292	90 54 27	3241	89 29 6	3249	88 3 54	3266
30	Spica	W.	67 54 31	3005	69 24 38	3010	70 54 38	3016	72 24 31	3021
	Saturn	W.	30 38 47	2999	32 9 1	3002	33 39 11	3007	35 9 15	3011
	Fomalhaut	E.	66 10 9	3230	64 46 21	3236	63 22 51	3261	61 59 39	3267
	α Pegasi	E.	81 0 21	3300	79 36 9	3309	78 12 8	3319	76 48 18	3329
	Jupiter	E.	104 37 22	2981	103 6 46	2986	101 36 18	2993	100 5 57	2996
31	Spica	W.	79 52 28	3043	81 21 47	3047	82 51 1	3052	84 20 10	3056
	Saturn	W.	42 38 21	3030	44 7 56	3034	45 37 27	3037	47 6 54	3041
	Antares	W.	34 44 54	3207	36 10 55	3198	37 37 6	3191	39 3 26	3184
	Fomalhaut	E.	55 8 29	3480	53 47 20	3480	52 26 34	3604	51 6 14	3629
	α Pegasi	E.	69 52 6	3382	68 29 29	3384	67 7 6	3407	65 44 57	3419
	Jupiter	E.	92 35 45	3023	91 6 0	3026	89 36 20	3030	88 6 45	3034

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S						Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, to be added to subtracted from Apparent Time.	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Semi-diameter.				
		^h ^m ^s	^s	[°] ['] ["]	["]	[°] ['] ["]	^s	^m ^s	^s	
Sat.	1	8 47 31.73	9.694	N. 17 54 5.7	38.14	15 48.13	66.61	6 1.64	0.162	
Sun.	2	8 51 24.08	9.669	17 38 41.6	38.86	15 48.26	66.52	5 57.44	0.187	
Mon.	3	8 55 15.82	9.644	17 23 0.3	39.58	15 48.40	66.44	5 52.65	0.212	
Tues.	4	8 59 6.97	9.619	17 7 2.0	40.28	15 48.54	66.35	5 47.25	0.237	
Wed.	5	9 2 57.51	9.594	16 50 47.1	40.97	15 48.68	66.27	5 41.25	0.262	
Thur.	6	9 6 47.47	9.570	16 34 15.8	41.64	15 48.83	66.18	5 34.67	0.286	
Fri.	7	9 10 36.85	9.545	16 17 28.4	42.30	15 48.98	66.10	5 27.52	0.310	
Sat.	8	9 14 25.65	9.521	16 0 25.2	42.95	15 49.13	66.01	5 19.79	0.333	
Sun.	9	9 18 13.88	9.496	15 43 6.7	43.59	15 49.28	65.93	5 11.49	0.356	
Mon.	10	9 22 1.56	9.476	15 25 32.9	44.22	15 49.44	65.84	5 2.64	0.379	
Tues.	11	9 25 48.69	9.454	15 7 44.2	44.84	15 49.60	65.76	4 53.24	0.402	
Wed.	12	9 29 35.28	9.432	14 49 41.0	45.43	15 49.76	65.67	4 43.31	0.425	
Thur.	13	9 33 21.34	9.411	14 31 23.5	46.02	15 49.93	65.59	4 32.84	0.447	
Fri.	14	9 37 6.87	9.388	14 12 52.1	46.60	15 50.10	65.51	4 21.85	0.469	
Sat.	15	9 40 51.88	9.366	13 54 7.0	47.16	15 50.28	65.43	4 10.22	0.490	
Sun.	16	9 44 36.37	9.344	13 35 8.5	47.71	15 50.46	65.35	3 58.30	0.512	
Mon.	17	9 48 20.34	9.323	13 15 57.1	48.25	15 50.65	65.27	3 45.76	0.533	
Tues.	18	9 52 3.81	9.302	12 56 33.0	48.77	15 50.84	65.20	3 32.71	0.554	
Wed.	19	9 55 46.81	9.282	12 36 56.6	49.28	15 51.03	65.13	3 19.19	0.574	
Thur.	20	9 59 29.31	9.262	12 17 8.3	49.77	15 51.23	65.06	3 5.18	0.594	
Fri.	21	10 3 11.35	9.242	11 57 8.3	50.25	15 51.43	64.99	2 50.69	0.614	
Sat.	22	10 6 52.91	9.223	11 36 57.0	50.71	15 51.64	64.93	2 35.74	0.633	
Sun.	23	10 10 34.01	9.204	11 16 34.5	51.16	15 51.85	64.87	2 20.33	0.652	
Mon.	24	10 14 14.66	9.185	10 56 1.4	51.60	15 52.07	64.81	2 4.47	0.670	
Tues.	25	10 17 54.89	9.168	10 35 17.9	52.03	15 52.29	64.75	1 48.19	0.688	
Wed.	26	10 21 34.70	9.151	10 14 24.4	52.44	15 52.51	64.70	1 31.49	0.705	
Thur.	27	10 25 14.08	9.135	9 53 21.3	52.84	15 52.73	64.64	1 14.37	0.721	
Fri.	28	10 28 53.08	9.119	9 32 8.9	53.22	15 52.96	64.59	0 56.87	0.736	
Sat.	29	10 32 31.74	9.104	9 10 47.3	53.59	15 53.19	64.54	0 39.02	0.751	
Sun.	30	10 36 10.05	9.080	8 49 17.0	53.95	15 53.42	64.49	0 20.82	0.765	
Mon.	31	10 39 48.02	9.077	8 27 38.2	54.30	15 53.65	64.44	0 2.29	0.779	
Tues.	32	10 43 25.67	9.064	N. 8 5 51.3	54.63	15 53.88	64.40	0 16.56	0.791	

NOTE. — Mean Time of the Semi-diameter passing may be found by subtracting 0.13 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be subtracted from	Diff. for 1 hour.	Sidereal Time.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	added to Mean Time.		
Sat.	1	8 ^h 47 ^m 30.76 ^s	9.694	N. 17° 54' 9.6"	38.14	6 ^m 1.66 ^s	0.162	8 41 29.10
Sun.	2	8 51 23.12	9.669	17 38 45.5	38.86	5 57.46	0.187	8 45 25.66
Mon.	3	8 55 14.88	9.644	17 23 4.2	39.58	5 52.67	0.212	8 49 22.21
Tues.	4	8 59 6.04	9.619	17 7 5.9	40.28	5 47.27	0.237	8 53 18.77
Wed.	5	9 2 56.60	9.594	16 50 51.0	40.97	5 41.28	0.262	8 57 15.32
Thur.	6	9 6 46.58	9.570	16 34 19.7	41.64	5 34.70	0.286	9 1 11.88
Fri.	7	9 10 35.98	9.545	16 17 32.3	42.30	5 27.55	0.310	9 5 8.43
Sat.	8	9 14 24.80	9.521	16 0 29.1	42.95	5 19.81	0.333	9 9 4.99
Sun.	9	9 18 13.06	9.498	15 43 10.5	43.59	5 11.52	0.356	9 13 1.54
Mon.	10	9 22 0.76	9.476	15 25 36.6	44.22	5 2.67	0.379	9 16 58.09
Tues.	11	9 25 47.92	9.454	15 7 47.8	44.84	4 53.27	0.402	9 20 54.65
Wed.	12	9 29 34.54	9.432	14 49 44.5	45.43	4 43.34	0.425	9 24 51.20
Thur.	13	9 33 20.68	9.411	14 21 26.9	46.02	4 32.97	0.447	9 28 47.76
Fri.	14	9 37 6.19	9.388	14 12 55.4	46.60	4 21.88	0.469	9 32 44.31
Sat.	15	9 40 51.23	9.366	13 54 10.3	47.16	4 10.36	0.490	9 36 40.87
Sun.	16	9 44 35.75	9.344	13 35 11.7	47.71	3 58.33	0.512	9 40 37.42
Mon.	17	9 48 19.76	9.323	13 16 0.1	48.25	3 45.79	0.533	9 44 33.97
Tues.	18	9 52 3.27	9.302	12 56 35.9	48.77	3 32.74	0.554	9 48 30.53
Wed.	19	9 55 46.30	9.282	12 36 59.4	49.28	3 19.22	0.574	9 52 27.06
Thur.	20	9 59 28.84	9.262	12 17 10.9	49.77	3 5.21	0.594	9 56 23.63
Fri.	21	10 3 10.91	9.242	11 57 10.7	50.25	2 50.72	0.614	10 0 20.19
Sat.	22	10 6 52.51	9.223	11 36 59.1	50.71	2 35.77	0.633	10 4 16.74
Sun.	23	10 10 33.65	9.204	11 16 36.4	51.16	2 20.36	0.652	10 8 13.29
Mon.	24	10 14 14.34	9.186	10 56 3.1	51.60	2 4.49	0.670	10 12 9.85
Tues.	25	10 17 54.61	9.168	10 35 19.5	52.03	1 48.21	0.688	10 16 6.40
Wed.	26	10 21 34.46	9.151	10 14 25.8	52.44	1 31.51	0.705	10 20 2.95
Thur.	27	10 25 13.89	9.135	9 53 22.4	52.84	1 14.38	0.721	10 23 59.51
Fri.	28	10 28 52.94	9.119	9 32 9.7	53.22	0 56.88	0.736	10 27 56.06
Sat.	29	10 32 31.64	9.104	9 10 47.9	53.59	0 39.03	0.751	10 31 52.61
Sun.	30	10 36 9.99	9.090	8 49 17.3	53.95	0 20.83	0.765	10 35 49.16
Mon.	31	10 39 48.01	9.077	8 27 38.2	54.30	0 2.29	0.779	10 39 45.72
Tues.	32	10 43 25.71	9.064	N. 8 5 51.1	54.63	0 16.56	0.791	10 43 42.27

Rem. — The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal Ob.
		True LONGITUDE.		DIF. for 1 hour.	LATITUDE.			
		λ	λ'					
1	214	129° 26' 32.3	26 11.3	143.53	+0.67	0.0063058	25.3	15 16 0.42
2	215	130 23 57.6	23 36.5	143.57	0.55	.0062445	25.8	15 12 4.51
3	216	131 21 23.9	21 2.6	143.61	0.42	.0061819	26.3	15 8 8.60
4	217	132 18 51.2	18 29.8	143.65	0.29	.0061180	26.8	15 4 12.69
5	218	133 16 19.5	15 58.0	143.70	0.16	.0060530	27.3	15 0 16.78
6	219	134 13 48.9	13 27.3	143.75	+0.03	.0059869	27.8	14 56 20.87
7	220	135 11 19.6	10 57.8	143.80	-0.08	.0059196	28.3	14 52 24.97
8	221	136 8 51.6	8 29.7	143.86	0.18	.0058509	28.9	14 48 29.06
9	222	137 6 25.0	6 3.0	143.91	0.26	.0057808	29.5	14 44 33.15
10	223	138 3 59.8	3 37.7	143.97	0.31	.0057092	30.1	14 40 37.24
11	224	139 1 36.1	1 13.9	144.03	0.32	.0056360	30.8	14 36 41.34
12	225	139 59 13.9	58 51.6	144.10	0.30	.0055610	31.6	14 32 45.43
13	226	140 56 53.3	56 30.8	144.16	0.25	.0054842	32.3	14 28 49.53
14	227	141 54 34.2	54 11.6	144.23	0.18	.0054056	33.1	14 24 53.62
15	228	142 52 16.6	51 53.9	144.29	-0.09	.0053250	33.9	14 20 57.70
16	229	143 50 0.5	49 37.7	144.35	+0.02	.0052423	34.8	14 17 1.79
17	230	144 47 45.8	47 22.9	144.41	0.15	.0051575	35.7	14 13 5.88
18	231	145 45 32.5	45 9.5	144.47	0.28	.0050706	36.6	14 9 9.98
19	232	146 43 20.6	42 57.5	144.53	0.41	.0049816	37.5	14 5 14.08
20	233	147 41 10.1	40 46.9	144.58	0.53	.0048906	38.3	14 1 18.17
21	234	148 39 0.9	38 37.6	144.64	0.64	.0047976	39.1	13 57 22.27
22	235	149 36 53.0	36 29.6	144.69	0.73	.0047028	39.8	13 53 26.36
23	236	150 34 46.5	34 23.0	144.75	0.79	.0046062	40.5	13 49 30.44
24	237	151 32 41.2	32 17.6	144.80	0.82	.0045078	41.2	13 45 34.54
25	238	152 30 37.2	30 13.5	144.86	0.82	.0044079	41.8	13 41 38.63
26	239	153 28 34.4	28 10.6	144.91	0.78	.0043067	42.3	13 37 42.72
27	240	154 26 32.9	26 9.0	144.96	0.72	.0042043	42.8	13 33 46.81
28	241	155 24 32.9	24 8.9	145.02	0.64	.0041008	43.2	13 29 50.91
29	242	156 22 34.3	22 10.2	145.08	0.55	.0039964	43.6	13 25 55.00
30	243	157 20 37.4	20 12.9	145.14	0.43	.0038913	43.9	13 21 59.09
31	244	158 18 41.1	18 17.1	145.20	0.30	.0037856	44.2	13 18 3.19
32	245	159 16 47.3	16 22.9	145.27	+0.17	0.0036793	44.4	13 14 7.28

NOTE: λ corresponds to the true equinox of the date, λ' to the mean equinox of January 0d.

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.

Day of the Month	SEMI- DIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	
1	14' 48.7	14' 47.1	54' 14.8	-0.55	54' 8.9	-0.43	10 ^h 54.5 ^m	1.99	12.6 ^d
2	14 45.9	14 45.0	54 4.3	0.32	54 1.1	0.21	11 41.6	1.94	13.6
3	14 44.5	14 44.3	53 59.2	-0.11	53 58.5	-0.00	12 27.5	1.89	14.6
4	14 44.5	14 45.0	53 59.2	+0.11	54 1.2	+0.23	13 12.2	1.84	15.6
5	14 45.9	14 47.3	54 4.6	0.35	54 9.5	0.47	13 55.9	1.80	16.6
6	14 49.0	14 51.2	54 16.0	0.61	54 24.1	0.75	14 38.9	1.79	17.6
7	14 53.8	14 57.1	54 34.0	0.89	54 45.6	1.04	15 21.9	1.80	18.6
8	15 0.7	15 4.9	54 59.0	1.20	55 14.3	1.35	16 5.5	1.84	19.6
9	15 9.6	15 14.8	55 31.6	1.51	55 50.7	1.67	16 50.5	1.92	20.6
10	15 20.5	15 26.6	56 11.6	1.81	56 34.2	1.95	17 37.7	2.03	21.6
11	15 33.2	15 40.2	56 58.4	2.07	57 23.9	2.17	18 27.9	2.16	22.6
12	15 47.4	15 54.9	57 50.6	2.25	58 17.9	2.28	19 21.5	2.31	23.6
13	16 2.4	16 9.8	58 45.4	2.28	59 12.6	2.22	20 18.6	2.44	24.6
14	16 16.9	16 23.6	59 38.8	2.12	60 3.5	1.95	21 18.5	2.53	25.6
15	16 29.7	16 34.9	60 25.7	1.73	60 45.0	1.46	22 19.8	2.56	26.6
16	16 39.2	16 42.3	61 0.7	1.13	61 12.2	+0.77	23 20.9	2.52	27.6
17	16 44.2	16 44.7	61 19.1	+0.37	61 21.0	-0.05	0 ^h		28.6
18	16 43.9	16 41.7	61 17.9	-0.46	61 9.9	0.86	0 20.3	2.43	0.3
19	16 38.2	16 33.7	60 57.2	1.23	60 40.4	1.56	1 17.4	2.33	1.3
20	16 28.1	16 21.7	60 19.8	1.84	59 56.2	2.06	2 12.1	2.23	2.3
21	16 14.6	16 7.1	59 30.3	2.22	59 2.8	2.33	3 4.7	2.16	3.3
22	15 59.4	15 51.6	58 34.4	2.37	58 5.7	2.37	3 55.7	2.11	4.3
23	15 43.9	15 36.4	57 37.4	2.32	57 10.0	2.24	4 45.9	2.08	5.3
24	15 29.2	15 22.5	56 43.7	2.12	56 19.1	1.98	5 35.6	2.07	6.3
25	15 16.3	15 10.6	55 56.2	1.82	55 35.4	1.65	6 25.0	2.06	7.3
26	15 5.5	15 1.0	55 16.6	1.46	55 0.1	1.29	7 14.3	2.05	8.3
27	14 57.1	14 53.7	54 45.6	1.12	54 33.2	0.94	8 3.2	2.03	9.3
28	14 50.9	14 48.7	54 22.9	0.77	54 14.7	0.60	8 51.5	1.99	10.3
29	14 47.0	14 45.8	54 8.4	0.44	54 4.0	0.30	9 38.9	1.95	11.3
30	14 45.0	14 44.7	54 1.3	-0.16	54 0.2	-0.03	10 25.1	1.90	12.3
31	14 44.9	14 45.3	54 0.7	+0.10	54 2.6	+0.21	11 10.2	1.86	13.3
32	14 46.2	14 47.5	54 5.8	+0.32	54 10.3	+0.42	11 54.3	1.82	14.3

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SATURDAY 1.					MONDAY 3.				
0	19 14 54.60	2.1080	S.19 2 27.4	1.679	0	20 53 58.21	2.0188	S.16 5 29.4	5.548
1	19 17 0.74	2.1016	19 0 44.0	1.768	1	20 55 59.27	2.0167	15 59 54.3	5.619
2	19 19 6.79	2.1003	18 58 55.3	1.846	2	20 58 0.22	2.0147	15 54 15.1	5.688
3	19 21 12.76	2.0989	18 57 1.3	1.944	3	21 0 1.05	2.0127	15 48 31.7	5.768
4	19 23 18.66	2.0975	18 55 2.0	2.032	4	21 2 1.75	2.0107	15 42 44.2	5.827
5	19 25 24.47	2.0961	18 52 57.5	2.119	5	21 4 2.33	2.0087	15 36 52.5	5.886
6	19 27 30.19	2.0947	18 50 47.7	2.206	6	21 6 2.79	2.0067	15 30 56.8	5.953
7	19 29 35.82	2.0932	18 48 32.7	2.292	7	21 8 3.13	2.0047	15 24 57.0	6.020
8	19 31 41.37	2.0918	18 46 12.5	2.380	8	21 10 3.36	2.0027	15 18 53.2	6.097
9	19 33 46.83	2.0903	18 43 47.1	2.467	9	21 12 3.46	2.0007	15 12 45.4	6.183
10	19 35 52.20	2.0888	18 41 16.5	2.553	10	21 14 3.44	1.9987	15 6 33.6	6.229
11	19 37 57.48	2.0873	18 38 40.8	2.638	11	21 16 3.30	1.9967	15 0 17.9	6.294
12	19 40 2.66	2.0858	18 35 59.9	2.724	12	21 18 3.04	1.9947	14 53 58.3	6.359
13	19 42 7.75	2.0840	18 33 13.9	2.809	13	21 20 2.66	1.9927	14 47 34.9	6.422
14	19 44 12.74	2.0824	18 30 22.8	2.894	14	21 22 2.16	1.9907	14 41 7.7	6.487
15	19 46 17.63	2.0808	18 27 26.6	2.978	15	21 24 1.54	1.9887	14 34 86.6	6.551
16	19 48 22.43	2.0791	18 24 25.4	3.063	16	21 26 0.81	1.9867	14 28 1.6	6.614
17	19 50 27.13	2.0774	18 21 19.1	3.147	17	21 27 59.96	1.9848	14 21 22.8	6.677
18	19 52 31.72	2.0757	18 18 7.8	3.230	18	21 29 58.99	1.9828	14 14 40.4	6.738
19	19 54 36.21	2.0740	18 14 51.5	3.313	19	21 31 57.90	1.9808	14 7 54.4	6.798
20	19 56 40.60	2.0722	18 11 30.2	3.396	20	21 33 56.70	1.9789	14 1 4.7	6.856
21	19 58 44.89	2.0706	18 8 4.0	3.478	21	21 35 55.38	1.9770	13 54 11.4	6.918
22	20 0 49.07	2.0688	18 4 32.8	3.560	22	21 37 53.94	1.9751	13 47 14.5	6.978
23	20 2 53.14	2.0670	S.18 0 56.7	3.643	23	21 39 52.39	1.9732	S.18 40 14.1	7.037
SUNDAY 2.					TUESDAY 4.				
0	20 4 57.11	2.0822	S.17 57 15.7	2.734	0	21 41 50.73	1.9718	S.18 33 10.1	7.096
1	20 7 0.97	2.0834	17 53 29.8	2.806	1	21 43 48.95	1.9694	18 26 2.6	7.158
2	20 9 4.72	2.0616	17 49 39.1	2.888	2	21 45 47.06	1.9670	18 18 51.7	7.210
3	20 11 8.36	2.0597	17 45 43.6	2.966	3	21 47 45.06	1.9650	18 11 37.4	7.267
4	20 13 11.89	2.0579	17 41 43.3	3.045	4	21 49 42.95	1.9630	18 4 19.7	7.328
5	20 15 15.31	2.0560	17 37 38.2	3.124	5	21 51 40.73	1.9622	17 56 58.7	7.378
6	20 17 18.61	2.0543	17 33 28.4	3.203	6	21 53 38.41	1.9604	17 49 34.3	7.433
7	20 19 21.80	2.0528	17 29 13.8	3.281	7	21 55 35.98	1.9586	17 42 6.6	7.488
8	20 21 24.88	2.0504	17 24 54.6	3.359	8	21 57 33.44	1.9568	17 34 35.7	7.543
9	20 23 27.85	2.0489	17 20 30.7	3.437	9	21 59 30.79	1.9550	17 27 1.6	7.596
10	20 25 30.70	2.0466	17 16 2.1	3.514	10	22 1 28.04	1.9532	17 19 24.2	7.649
11	20 27 33.43	2.0446	17 11 28.9	3.591	11	22 3 25.19	1.9516	17 11 42.7	7.701
12	20 29 36.05	2.0427	17 6 51.2	3.667	12	22 5 22.23	1.9499	17 4 0.1	7.753
13	20 31 38.55	2.0407	17 2 8.9	3.743	13	22 7 19.17	1.9482	11 56 13.4	7.804
14	20 33 40.93	2.0388	16 57 22.0	3.819	14	22 9 16.01	1.9465	11 48 23.6	7.856
15	20 35 43.19	2.0368	16 52 30.6	3.894	15	22 11 12.75	1.9449	11 40 36.8	7.906
16	20 37 45.34	2.0348	16 47 34.7	3.969	16	22 13 9.40	1.9432	11 32 35.0	7.954
17	20 39 47.37	2.0328	16 42 34.4	4.043	17	22 15 5.95	1.9417	11 24 36.3	8.003
18	20 41 49.28	2.0308	16 37 29.6	4.117	18	22 17 2.40	1.9401	11 16 34.6	8.052
19	20 43 51.07	2.0288	16 32 20.4	4.190	19	22 18 58.76	1.9385	11 8 30.0	8.100
20	20 45 52.74	2.0268	16 27 6.8	4.263	20	22 20 55.02	1.9370	11 0 22.6	8.147
21	20 47 54.29	2.0248	16 21 48.9	4.334	21	22 22 51.19	1.9356	10 52 12.4	8.194
22	20 49 55.72	2.0228	16 16 26.7	4.406	22	22 24 47.28	1.9340	10 43 59.3	8.240
23	20 51 57.03	2.0208	16 11 0.2	4.477	23	22 26 43.28	1.9326	10 35 43.5	8.286
24	20 53 58.21	2.0188	S.16 5 29.4	4.548	24	22 28 39.19	1.9311	S.10 27 25.0	8.331

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
WEDNESDAY 5.					FRIDAY 7.				
0	22 28 39.19	1.9311	S. 10 27 25.0	8.331	0	0 0 16.72	1.9004	S. 3 6 25.5	9.823
1	22 30 35.01	1.9297	10 19 3.8	8.376	1	0 2 10.75	1.9007	2 56 35.6	9.840
2	22 32 30.75	1.9283	10 10 39.9	8.420	2	0 4 4.80	1.9010	2 46 44.7	9.856
3	22 34 26.41	1.9270	10 2 13.4	8.463	3	0 5 58.87	1.9014	2 36 52.8	9.872
4	22 36 21.99	1.9256	9 53 44.4	8.506	4	0 7 52.97	1.9018	2 27 0.0	9.887
5	22 38 17.49	1.9243	9 45 12.8	8.548	5	0 9 47.09	1.9023	2 17 6.3	9.902
6	22 40 12.91	1.9230	9 36 38.7	8.590	6	0 11 41.25	1.9028	2 7 11.7	9.916
7	22 42 8.26	1.9218	9 28 2.1	8.631	7	0 13 35.44	1.9034	1 57 16.3	9.929
8	22 44 3.53	1.9206	9 19 23.0	8.672	8	0 15 29.66	1.9040	1 47 20.2	9.942
9	22 45 58.73	1.9194	9 10 41.5	8.712	9	0 17 23.92	1.9047	1 37 23.3	9.955
10	22 47 53.86	1.9183	9 1 57.6	8.751	10	0 19 18.23	1.9054	1 27 25.6	9.967
11	22 49 48.92	1.9172	8 53 11.4	8.789	11	0 21 12.58	1.9062	1 17 27.3	9.978
12	22 51 43.92	1.9161	8 44 22.9	8.827	12	0 23 6.98	1.9070	1 7 28.3	9.988
13	22 53 38.85	1.9150	8 35 32.1	8.865	13	0 25 1.43	1.9079	0 57 28.7	9.998
14	22 55 33.72	1.9139	8 26 39.1	8.902	14	0 26 55.93	1.9088	0 47 28.6	10.007
15	22 57 28.53	1.9129	8 17 43.9	8.939	15	0 28 50.49	1.9098	0 37 27.9	10.016
16	22 59 23.27	1.9119	8 8 46.4	8.976	16	0 30 45.11	1.9108	0 27 26.7	10.024
17	23 1 17.96	1.9110	7 59 46.8	9.011	17	0 32 39.79	1.9118	0 17 25.1	10.031
18	23 3 12.59	1.9101	7 50 45.1	9.046	18	0 34 34.53	1.9129	S. 0 7 23.0	10.038
19	23 5 7.17	1.9092	7 41 41.4	9.079	19	0 36 29.34	1.9141	N. 0 2 39.5	10.044
20	23 7 1.70	1.9084	7 32 35.6	9.113	20	0 38 24.22	1.9158	0 12 42.3	10.049
21	23 8 56.18	1.9076	7 23 27.8	9.147	21	0 40 19.17	1.9166	0 22 45.4	10.054
22	23 10 50.61	1.9069	7 14 18.0	9.180	22	0 42 14.20	1.9178	0 32 48.8	10.059
23	23 12 45.00	1.9062	S. 7 5 6.3	9.212	23	0 44 9.31	1.9192	N. 0 42 52.4	10.063
THURSDAY 6.					SATURDAY 8.				
0	23 14 39.35	1.9055	S. 6 55 52.7	9.243	0	0 46 4.50	1.9200	N. 0 52 56.3	10.066
1	23 16 33.66	1.9046	6 46 37.3	9.273	1	0 47 59.78	1.9210	1 3 0.3	10.068
2	23 18 27.92	1.9042	6 37 20.0	9.303	2	0 49 55.14	1.9226	1 13 4.5	10.070
3	23 20 22.15	1.9038	6 28 0.9	9.333	3	0 51 50.59	1.9240	1 23 8.7	10.071
4	23 22 16.35	1.9030	6 18 40.0	9.362	4	0 53 46.14	1.9256	1 33 13.0	10.073
5	23 24 10.51	1.9026	6 9 17.4	9.391	5	0 55 41.79	1.9268	1 43 17.3	10.072
6	23 26 4.65	1.9020	5 59 53.1	9.419	6	0 57 37.53	1.9280	1 53 21.6	10.071
7	23 27 58.76	1.9016	5 50 27.2	9.446	7	0 59 33.38	1.9297	2 3 25.8	10.069
8	23 29 52.84	1.9013	5 40 59.6	9.473	8	1 1 29.34	1.9310	2 13 29.9	10.067
9	23 31 46.90	1.9008	5 31 30.4	9.499	9	1 3 25.40	1.9328	2 23 33.8	10.064
10	23 33 40.94	1.9005	5 21 59.7	9.526	10	1 5 21.58	1.9373	2 33 37.6	10.061
11	23 35 34.96	1.9002	5 12 27.5	9.556	11	1 7 17.87	1.9392	2 43 41.2	10.057
12	23 37 28.97	1.9000	5 2 53.7	9.574	12	1 9 14.28	1.9412	2 53 44.5	10.053
13	23 39 22.96	1.9007	4 53 18.5	9.598	13	1 11 10.81	1.9432	3 3 47.5	10.047
14	23 41 16.94	1.9006	4 43 41.9	9.621	14	1 13 7.47	1.9458	3 13 50.2	10.041
15	23 43 10.91	1.9005	4 34 3.9	9.644	15	1 15 4.25	1.9474	3 23 52.5	10.034
16	23 45 4.88	1.9004	4 24 24.6	9.666	16	1 17 1.16	1.9495	3 33 54.3	10.027
17	23 46 58.85	1.9004	4 14 43.9	9.688	17	1 18 58.21	1.9519	3 43 55.7	10.019
18	23 48 52.81	1.9004	4 5 2.0	9.708	18	1 20 55.39	1.9542	3 53 56.6	10.011
19	23 50 46.78	1.9006	3 55 18.9	9.729	19	1 22 52.71	1.9566	4 3 57.0	10.003
20	23 52 40.75	1.9008	3 45 34.5	9.749	20	1 24 50.18	1.9590	4 13 56.8	9.991
21	23 54 34.78	1.9007	3 35 48.9	9.769	21	1 26 47.79	1.9618	4 23 55.9	9.980
22	23 56 28.71	1.9009	3 26 2.2	9.788	22	1 28 45.56	1.9640	4 33 54.4	9.969
23	23 58 22.71	1.9001	3 16 14.4	9.806	23	1 30 43.48	1.9666	4 43 52.2	9.957
24	0 0 16.72	1.9004	S. 3 6 25.5	9.823	24	1 32 41.55	1.9692	N. 4 53 49.2	9.944

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SUNDAY 9.					TUESDAY 11.				
0	1 32 41.55	1.9892	N. 4 53 49.2	9.944	0	3 11 11.78	2.1636	N. 12 21 47.5	8.400
1	1 34 39.78	1.9718	5 3 45.5	9.931	1	3 13 21.15	2.1686	12 30 10.0	8.347
2	1 36 38.17	1.9746	5 13 40.9	9.916	2	3 15 30.81	2.1636	12 38 29.2	8.322
3	1 38 36.73	1.9774	5 23 35.4	9.901	3	3 17 40.77	2.1686	12 46 45.1	8.337
4	1 40 35.46	1.9802	5 33 29.0	9.885	4	3 19 51.03	2.1736	12 54 57.6	8.181
5	1 42 34.36	1.9831	5 43 21.6	9.869	5	3 22 1.59	2.1786	13 3 6.7	8.128
6	1 44 33.43	1.9860	5 53 13.3	9.852	6	3 24 12.46	2.1837	13 11 12.3	8.084
7	1 46 32.68	1.9890	6 3 3.9	9.834	7	3 26 23.64	2.1888	13 19 14.3	8.004
8	1 48 32.11	1.9920	6 12 53.4	9.816	8	3 28 35.12	2.1940	13 27 12.8	7.943
9	1 50 31.72	1.9951	6 22 41.7	9.798	9	3 30 46.92	2.1992	13 35 7.6	7.893
10	1 52 31.52	1.9982	6 32 28.9	9.776	10	3 32 59.03	2.2044	13 42 58.6	7.819
11	1 54 31.51	2.0014	6 42 14.8	9.756	11	3 35 11.46	2.2097	13 50 45.8	7.766
12	1 56 31.69	2.0046	6 51 59.5	9.733	12	3 37 24.20	2.2150	13 58 29.2	7.690
13	1 58 32.07	2.0079	7 1 42.8	9.711	13	3 39 37.26	2.2203	14 6 8.7	7.634
14	2 0 32.64	2.0113	7 11 24.8	9.688	14	3 41 50.64	2.2257	14 13 44.1	7.567
15	2 2 33.42	2.0147	7 21 5.4	9.664	15	3 44 4.34	2.2311	14 21 15.5	7.489
16	2 4 34.41	2.0182	7 30 44.5	9.639	16	3 46 18.37	2.2364	14 28 42.8	7.420
17	2 6 35.61	2.0217	7 40 22.1	9.613	17	3 48 32.72	2.2418	14 36 5.9	7.360
18	2 8 37.01	2.0252	7 49 58.1	9.587	18	3 50 47.39	2.2472	14 43 24.8	7.279
19	2 10 38.62	2.0288	7 59 32.6	9.560	19	3 53 2.39	2.2527	14 50 39.4	7.207
20	2 12 40.46	2.0325	8 9 5.4	9.532	20	3 55 17.72	2.2582	14 57 49.6	7.133
21	2 14 42.52	2.0362	8 18 36.5	9.503	21	3 57 33.38	2.2637	15 4 55.4	7.059
22	2 16 44.80	2.0399	8 28 5.8	9.473	22	3 59 49.36	2.2691	15 11 56.7	6.983
23	2 18 47.30	2.0437	N. 8 37 33.3	9.443	23	4 2 5.67	2.2746	N. 15 18 53.4	6.907
MONDAY 10.					WEDNESDAY 12.				
0	2 20 50.04	2.0475	N. 8 46 59.0	9.419	0	4 4 22.31	2.2801	N. 15 25 45.5	6.829
1	2 22 53.01	2.0514	8 56 22.8	9.390	1	4 6 39.28	2.2857	15 32 32.9	6.761
2	2 24 56.21	2.0553	9 5 44.6	9.347	2	4 8 56.59	2.2912	15 39 15.6	6.671
3	2 26 59.65	2.0593	9 15 4.5	9.314	3	4 11 14.23	2.2968	15 45 53.4	6.560
4	2 29 3.33	2.0634	9 24 22.3	9.279	4	4 13 32.21	2.3023	15 52 26.4	6.466
5	2 31 7.26	2.0675	9 33 38.0	9.244	5	4 15 50.52	2.3079	15 58 54.4	6.424
6	2 33 11.43	2.0716	9 42 51.6	9.208	6	4 18 9.16	2.3136	16 5 17.3	6.340
7	2 35 15.85	2.0758	9 52 3.0	9.171	7	4 20 28.14	2.3192	16 11 35.2	6.265
8	2 37 20.53	2.0800	10 1 12.1	9.133	8	4 22 47.46	2.3248	16 17 47.9	6.169
9	2 39 25.46	2.0843	10 10 18.9	9.094	9	4 25 7.11	2.3305	16 23 55.4	6.061
10	2 41 30.64	2.0886	10 19 23.4	9.054	10	4 27 27.09	2.3362	16 29 57.6	5.992
11	2 43 36.08	2.0929	10 28 25.4	9.013	11	4 29 47.40	2.3418	16 35 54.5	5.903
12	2 45 41.79	2.0974	10 37 25.0	8.971	12	4 32 8.05	2.3475	16 41 46.0	5.813
13	2 47 47.77	2.1019	10 46 22.1	8.929	13	4 34 29.03	2.3532	16 47 32.0	5.721
14	2 49 54.02	2.1063	10 55 16.5	8.886	14	4 36 50.35	2.3589	16 53 12.5	5.628
15	2 52 0.54	2.1108	11 4 8.3	8.842	15	4 39 12.00	2.3646	16 58 47.3	5.533
16	2 54 7.32	2.1154	11 12 57.5	8.797	16	4 41 33.98	2.3702	17 4 16.5	5.438
17	2 56 14.38	2.1200	11 21 44.0	8.761	17	4 43 56.29	2.3746	17 9 39.9	5.342
18	2 58 21.72	2.1247	11 30 27.6	8.704	18	4 46 18.92	2.3801	17 14 57.5	5.245
19	3 0 29.35	2.1295	11 39 8.4	8.666	19	4 48 41.89	2.3856	17 20 9.3	5.147
20	3 2 37.26	2.1343	11 47 46.3	8.607	20	4 51 5.19	2.3910	17 25 15.1	5.047
21	3 4 45.46	2.1390	11 56 21.2	8.567	21	4 53 28.81	2.3964	17 30 14.9	4.946
22	3 6 53.94	2.1438	12 4 53.1	8.506	22	4 55 52.76	2.4019	17 35 8.6	4.844
23	3 9 2.71	2.1487	12 13 21.9	8.453	23	4 58 17.03	2.4073	17 39 56.2	4.742
24	3 11 11.78	2.1536	N. 12 21 47.5	8.400	24	5 0 41.63	2.4127	N. 17 44 37.6	4.638

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
THURSDAY 13.					SATURDAY 15.				
0	5 0 41.63	2.4137	N.17° 44' 37.6	4.888	0	7 1 43.54	2.6029	N.19° 10' 2.0	1.384
1	5 3 6.55	2.4180	17 49 12.7	4.833	1	7 4 19.77	2.6048	19 8 36.0	1.403
2	5 5 31.79	2.4232	17 53 41.6	4.827	2	7 6 56.12	2.6066	19 7 1.6	1.442
3	5 7 57.34	2.4285	17 58 4.1	4.821	3	7 9 32.57	2.6083	19 5 18.9	1.789
4	5 10 23.21	2.4337	18 2 20.1	4.815	4	7 12 9.12	2.6099	19 3 27.8	1.921
5	5 12 49.39	2.4389	18 6 29.6	4.104	5	7 14 45.76	2.6114	19 1 28.3	2.061
6	5 15 15.88	2.4441	18 10 32.6	3.994	6	7 17 22.49	2.6129	18 59 20.5	2.300
7	5 17 42.68	2.4492	18 14 28.9	3.883	7	7 19 59.30	2.6141	18 57 4.3	2.340
8	5 20 9.79	2.4543	18 18 18.5	3.771	8	7 22 36.18	2.6152	18 54 39.7	2.479
9	5 22 37.20	2.4593	18 22 1.4	3.659	9	7 25 13.13	2.6163	18 52 6.7	2.619
10	5 25 4.91	2.4643	18 25 37.5	3.544	10	7 27 50.14	2.6173	18 49 25.4	2.758
11	5 27 32.92	2.4692	18 29 6.7	3.429	11	7 30 27.20	2.6182	18 46 35.7	2.898
12	5 30 1.22	2.4741	18 32 29.0	3.313	12	7 33 4.32	2.6189	18 43 37.7	3.038
13	5 32 29.81	2.4790	18 35 44.3	3.197	13	7 35 41.48	2.6196	18 40 31.3	3.177
14	5 34 58.70	2.4838	18 38 52.6	3.079	14	7 38 18.67	2.6201	18 37 16.5	3.315
15	5 37 27.87	2.4886	18 41 53.8	2.960	15	7 40 55.89	2.6206	18 33 53.4	3.453
16	5 39 57.33	2.4932	18 44 47.8	2.840	16	7 43 33.13	2.6206	18 30 22.1	3.592
17	5 42 27.06	2.4978	18 47 34.6	2.719	17	7 46 10.39	2.6211	18 26 42.5	3.730
18	5 44 57.07	2.5024	18 50 14.1	2.598	18	7 48 47.66	2.6212	18 22 54.5	3.868
19	5 47 27.35	2.5069	18 52 46.3	2.476	19	7 51 24.94	2.6213	18 18 58.3	4.006
20	5 49 57.90	2.5114	18 55 11.2	2.352	20	7 54 2.22	2.6213	18 14 53.9	4.143
21	5 52 28.71	2.5158	18 57 28.6	2.228	21	7 56 39.49	2.6210	18 10 41.3	4.278
22	5 54 59.79	2.5201	18 59 38.6	2.103	22	7 59 16.74	2.6206	18 6 20.5	4.415
23	5 57 31.12	2.5243	N.19° 1 41.1	1.978	23	8 1 53.96	2.6202	N.18° 1 51.5	4.551
FRIDAY 14.					SUNDAY 16.				
0	6 0 2.70	2.6284	N.19° 3 36.0	1.862	0	8 4 31.16	2.6197	N.17° 57 14.4	4.696
1	6 2 34.53	2.6326	19 5 23.3	1.735	1	8 7 8.33	2.6192	17 52 29.2	4.830
2	6 5 6.60	2.6366	19 7 3.0	1.607	2	8 9 45.46	2.6186	17 47 36.0	4.964
3	6 7 38.91	2.6406	19 8 34.9	1.468	3	8 12 22.54	2.6177	17 42 34.7	5.098
4	6 10 11.46	2.6443	19 9 59.1	1.338	4	8 14 59.58	2.6168	17 37 25.5	5.221
5	6 12 44.23	2.6481	19 11 15.5	1.208	5	8 17 36.56	2.6158	17 32 8.3	5.353
6	6 15 17.23	2.6518	19 12 24.1	1.077	6	8 20 13.48	2.6147	17 26 43.2	5.484
7	6 17 50.45	2.6554	19 13 24.8	0.945	7	8 22 50.33	2.6136	17 21 10.2	5.615
8	6 20 23.88	2.6589	19 14 17.6	0.814	8	8 25 27.10	2.6122	17 15 29.4	5.744
9	6 22 57.52	2.6623	19 15 2.5	0.682	9	8 28 3.79	2.6108	17 9 40.9	5.873
10	6 25 31.36	2.6657	19 15 30.4	0.549	10	8 30 40.40	2.6094	17 3 44.6	6.001
11	6 28 5.40	2.6690	19 16 8.3	0.416	11	8 33 16.92	2.6079	16 57 40.7	6.129
12	6 30 39.64	2.6722	19 16 29.2	0.281	12	8 35 53.35	2.6063	16 51 29.1	6.256
13	6 33 14.07	2.6753	19 16 42.0	0.146	13	8 38 29.68	2.6046	16 45 10.0	6.382
14	6 35 48.68	2.6783	19 16 46.7	0.010	14	8 41 5.89	2.6027	16 38 43.3	6.507
15	6 38 23.47	2.6812	19 16 43.2	0.195	15	8 43 41.99	2.6008	16 32 9.2	6.631
16	6 40 58.42	2.6840	19 16 31.6	0.282	16	8 46 17.98	2.5988	16 25 27.6	6.753
17	6 43 33.54	2.6867	19 16 11.8	0.369	17	8 48 53.85	2.5968	16 18 38.7	6.876
18	6 46 8.82	2.6893	19 15 43.7	0.456	18	8 51 29.59	2.5946	16 11 42.6	6.998
19	6 48 44.26	2.6918	19 15 7.5	0.543	19	8 54 5.20	2.5923	16 4 39.2	7.117
20	6 51 19.84	2.6942	19 14 23.0	0.631	20	8 56 40.67	2.5900	15 57 28.6	7.236
21	6 53 55.57	2.6966	19 13 30.2	0.719	21	8 59 16.00	2.5877	15 50 11.0	7.353
22	6 56 31.43	2.6988	19 12 29.1	0.807	22	9 1 51.19	2.5853	15 42 46.3	7.469
23	6 59 7.42	2.6999	19 11 19.7	0.895	23	9 4 26.23	2.5828	15 35 14.6	7.586
24	7 1 43.54	2.6979	N.19° 10 2.0	1.364	24	9 7 1.12	2.5801	N.15° 27 36.1	7.699

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
MONDAY 17.					WEDNESDAY 19.				
0	9 7 1.12	2.5601	N. 15° 27' 36.1	7.000	0	11 6 59.51	2.4089	N. 7° 32' 47.1	11.496
1	9 9 35.85	2.5774	15 19 50.8	7.812	1	11 9 23.93	2.4051	7 21 16.1	11.586
2	9 12 10.41	2.5747	15 11 58.7	7.924	2	11 11 48.12	2.4012	7 9 42.7	11.575
3	9 14 44.81	2.5720	15 3 59.9	8.086	3	11 14 12.08	2.3974	6 58 7.0	11.413
4	9 17 19.05	2.5691	14 55 54.5	8.148	4	11 16 35.81	2.3936	6 46 29.2	11.448
5	9 19 53.12	2.5662	14 47 42.6	8.053	5	11 18 59.31	2.3898	6 34 49.3	11.602
6	9 22 27.00	2.5632	14 39 24.2	8.860	6	11 21 22.59	2.3860	6 23 7.4	11.714
7	9 25 0.70	2.5602	14 30 59.4	8.466	7	11 23 45.64	2.3822	6 11 23.6	11.746
8	9 27 34.22	2.5572	14 22 28.4	8.500	8	11 26 8.46	2.3784	5 59 38.0	11.774
9	9 30 7.56	2.5541	14 13 51.2	8.672	9	11 28 31.06	2.3747	5 47 50.7	11.802
10	9 32 40.71	2.5509	14 5 7.8	8.773	10	11 30 53.43	2.3710	5 36 1.8	11.886
11	9 35 13.67	2.5477	13 56 18.4	8.878	11	11 33 15.58	2.3673	5 24 11.4	11.868
12	9 37 46.43	2.5444	13 47 23.0	8.972	12	11 35 37.51	2.3637	5 12 19.6	11.876
13	9 40 18.99	2.5410	13 38 21.7	9.080	13	11 37 59.22	2.3601	5 0 26.4	11.897
14	9 42 51.35	2.5376	13 29 14.7	9.166	14	11 40 20.72	2.3564	4 48 32.0	11.916
15	9 45 23.51	2.5343	13 20 2.0	9.260	15	11 42 42.00	2.3528	4 36 36.5	11.984
16	9 47 55.46	2.5308	13 10 43.6	9.362	16	11 45 3.06	2.3493	4 24 39.9	11.961
17	9 50 27.20	2.5273	13 1 19.7	9.448	17	11 47 23.91	2.3458	4 12 42.3	11.967
18	9 52 58.73	2.5238	12 51 50.4	9.533	18	11 49 44.55	2.3423	4 0 43.9	11.981
19	9 55 30.05	2.5202	12 42 15.7	9.622	19	11 52 4.98	2.3388	3 48 44.7	11.968
20	9 58 1.15	2.5166	12 32 35.8	9.708	20	11 54 25.21	2.3353	3 36 44.8	12.004
21	10 0 32.03	2.5129	12 22 50.8	9.793	21	11 56 45.23	2.3318	3 24 44.3	12.013
22	10 3 2.70	2.5093	12 13 0.6	9.877	22	11 59 5.03	2.3284	3 12 43.3	12.021
23	10 5 33.15	2.5056	N. 12° 3' 5.4	9.960	23	12 1 24.63	2.3250	N. 3° 0' 41.8	12.036
TUESDAY 18.					THURSDAY 20.				
0	10 8 3.37	2.5019	N. 11° 53' 5.4	10.040	0	12 3 44.03	2.3217	N. 2° 48' 40.0	12.083
1	10 10 33.37	2.4981	11 43 0.6	10.119	1	12 6 3.24	2.3180	2 36 38.0	12.035
2	10 13 3.14	2.4944	11 32 51.1	10.197	2	12 8 22.25	2.3142	2 24 35.8	12.087
3	10 15 32.69	2.4906	11 22 37.0	10.273	3	12 10 41.06	2.3119	2 12 33.5	12.036
4	10 18 2.01	2.4868	11 12 18.3	10.347	4	12 12 59.68	2.3087	2 0 31.2	12.038
5	10 20 31.10	2.4829	11 1 55.2	10.420	5	12 15 18.11	2.3056	1 48 29.0	12.036
6	10 22 59.96	2.4791	10 51 27.9	10.491	6	12 17 36.35	2.3025	1 36 26.9	12.082
7	10 25 28.59	2.4752	10 40 56.3	10.561	7	12 19 54.41	2.2994	1 24 25.1	12.077
8	10 27 56.99	2.4713	10 30 20.6	10.629	8	12 22 12.28	2.2963	1 12 23.7	12.021
9	10 30 25.15	2.4674	10 19 40.8	10.696	9	12 24 29.97	2.2933	1 0 22.7	12.013
10	10 32 53.08	2.4636	10 8 57.1	10.760	10	12 26 47.47	2.2903	0 48 22.1	12.004
11	10 35 20.78	2.4597	9 58 9.6	10.828	11	12 29 4.80	2.2873	0 36 22.1	11.994
12	10 37 48.24	2.4558	9 47 18.3	10.886	12	12 31 21.95	2.2844	0 24 22.8	11.992
13	10 40 15.47	2.4518	9 36 23.4	10.945	13	12 33 38.93	2.2816	0 12 24.2	11.980
14	10 42 42.46	2.4479	9 25 24.9	11.003	14	12 35 55.74	2.2787	N. 0° 0' 26.5	11.965
15	10 45 9.22	2.4440	9 14 23.0	11.060	15	12 38 12.38	2.2758	S. 0° 11' 30.4	11.940
16	10 47 35.74	2.4401	9 3 17.8	11.114	16	12 40 28.84	2.2730	0 23 26.3	11.934
17	10 50 2.03	2.4362	8 52 9.3	11.167	17	12 42 45.14	2.2702	0 35 21.2	11.906
18	10 52 28.09	2.4323	8 40 57.7	11.219	18	12 45 1.28	2.2676	0 47 15.0	11.887
19	10 54 53.91	2.4284	8 29 43.0	11.269	19	12 47 17.96	2.2650	0 59 7.6	11.866
20	10 57 19.50	2.4245	8 18 25.4	11.318	20	12 49 33.08	2.2624	1 10 58.9	11.844
21	10 59 44.85	2.4206	8 7 4.9	11.366	21	12 51 48.74	2.2598	1 22 48.9	11.822
22	11 2 9.97	2.4167	7 55 41.6	11.410	22	12 54 4.25	2.2572	1 34 37.5	11.798
23	11 4 34.86	2.4128	7 44 15.6	11.454	23	12 56 19.61	2.2547	1 46 24.6	11.773
24	11 6 59.51	2.4089	N. 7° 32' 47.1	11.496	24	12 58 34.81	2.2522	S. 1° 58' 10.1	11.746

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
FRIDAY 21.					SUNDAY 23.				
0	12 58 34.81	2.2522	S. 1° 58' 10.1"	11.745	0	14 44 32.59	2.1761	S. 10° 32' 21.1"	9.346
1	13 0 49.87	2.2496	2 9 54.0	11.718	1	14 46 43.13	2.1753	10 41 39.8	9.277
2	13 3 4.79	2.2474	2 21 36.3	11.689	2	14 48 53.62	2.1745	10 50 54.3	9.207
3	13 5 19.56	2.2450	2 33 16.8	11.660	3	14 51 4.07	2.1738	11 0 4.6	9.137
4	13 7 34.19	2.2427	2 44 55.4	11.629	4	14 53 14.47	2.1730	11 9 10.7	9.066
5	13 9 48.68	2.2404	2 56 32.2	11.597	5	14 55 24.83	2.1723	11 18 12.5	8.996
6	13 12 3.04	2.2382	3 8 7.0	11.564	6	14 57 35.14	2.1716	11 27 10.1	8.928
7	13 14 17.27	2.2360	3 19 39.8	11.529	7	14 59 45.41	2.1709	11 36 3.3	8.850
8	13 16 31.36	2.2338	3 31 10.5	11.494	8	15 1 55.65	2.1702	11 44 52.1	8.777
9	13 18 45.32	2.2317	3 42 39.0	11.458	9	15 4 5.85	2.1696	11 53 36.5	8.708
10	13 20 59.16	2.2296	3 54 5.4	11.421	10	15 6 16.00	2.1690	12 2 16.5	8.629
11	13 23 12.88	2.2276	4 5 29.5	11.383	11	15 8 26.12	2.1684	12 10 52.0	8.556
12	13 25 26.47	2.2256	4 16 51.3	11.344	12	15 10 36.21	2.1678	12 19 23.1	8.480
13	13 27 39.94	2.2236	4 28 10.7	11.303	13	15 12 46.26	2.1673	12 27 49.6	8.404
14	13 29 53.30	2.2216	4 39 27.6	11.261	14	15 14 56.28	2.1667	12 36 11.6	8.328
15	13 32 6.54	2.2197	4 50 42.0	11.218	15	15 17 6.26	2.1662	12 44 29.0	8.251
16	13 34 19.67	2.2178	5 1 53.8	11.175	16	15 19 16.22	2.1657	12 52 41.7	8.174
17	13 36 32.69	2.2160	5 13 3.0	11.131	17	15 21 26.15	2.1652	13 0 49.8	8.096
18	13 38 45.59	2.2143	5 24 9.5	11.086	18	15 23 36.05	2.1647	13 8 53.2	8.018
19	13 40 58.39	2.2126	5 35 13.2	11.039	19	15 25 45.92	2.1643	13 16 51.9	7.939
20	13 43 11.09	2.2108	5 46 14.2	10.992	20	15 27 55.77	2.1638	13 24 45.9	7.860
21	13 45 23.69	2.2091	5 57 12.3	10.944	21	15 30 5.59	2.1634	13 32 35.1	7.781
22	13 47 36.18	2.2074	6 8 7.5	10.896	22	15 32 15.38	2.1630	13 40 19.6	7.701
23	13 49 48.57	2.2058	S. 6 18 59.7	10.846	23	15 34 25.15	2.1626	S. 13 47 59.3	7.620
SATURDAY 22.					MONDAY 24.				
0	13 52 0.87	2.2043	S. 6 29 49.0	10.796	0	15 36 34.89	2.1622	S. 13 55 34.0	7.538
1	13 54 13.08	2.2027	6 40 35.2	10.743	1	15 38 44.61	2.1618	14 3 3.9	7.456
2	13 56 25.19	2.2012	6 51 18.2	10.691	2	15 40 54.31	2.1615	14 10 29.0	7.377
3	13 58 37.21	2.1997	7 1 58.1	10.638	3	15 43 3.99	2.1612	14 17 49.2	7.296
4	14 0 49.15	2.1983	7 12 34.8	10.584	4	15 45 13.65	2.1608	14 25 4.4	7.213
5	14 3 1.01	2.1969	7 23 8.2	10.529	5	15 47 23.29	2.1605	14 32 14.6	7.129
6	14 5 12.78	2.1956	7 33 38.3	10.473	6	15 49 32.91	2.1601	14 39 19.9	7.046
7	14 7 24.47	2.1943	7 44 5.0	10.417	7	15 51 42.51	2.1598	14 46 20.2	6.962
8	14 9 36.08	2.1929	7 54 28.3	10.360	8	15 53 52.09	2.1595	14 53 15.4	6.879
9	14 11 47.61	2.1916	8 4 48.1	10.303	9	15 56 1.65	2.1592	15 0 5.6	6.796
10	14 13 59.07	2.1904	8 15 4.5	10.243	10	15 58 11.20	2.1589	15 6 50.8	6.710
11	14 16 10.46	2.1892	8 25 17.3	10.183	11	16 0 20.73	2.1587	15 13 30.9	6.628
12	14 18 21.77	2.1880	8 35 26.5	10.123	12	16 2 30.24	2.1584	15 20 5.8	6.540
13	14 20 33.01	2.1868	8 45 32.1	10.063	13	16 4 39.73	2.1581	15 26 35.6	6.454
14	14 22 44.19	2.1857	8 55 34.0	10.001	14	16 6 49.21	2.1578	15 33 0.3	6.368
15	14 24 55.30	2.1847	9 5 32.1	9.938	15	16 8 58.67	2.1576	15 39 19.8	6.282
16	14 27 6.35	2.1836	9 15 26.5	9.875	16	16 11 8.12	2.1573	15 45 34.2	6.196
17	14 29 17.33	2.1826	9 25 17.1	9.811	17	16 13 17.55	2.1570	15 51 43.4	6.109
18	14 31 28.25	2.1815	9 35 3.8	9.746	18	16 15 26.96	2.1567	15 57 47.3	6.022
19	14 33 39.11	2.1806	9 44 46.6	9.681	19	16 17 36.36	2.1565	16 3 46.0	5.936
20	14 35 49.92	2.1796	9 54 25.5	9.616	20	16 19 45.74	2.1562	16 9 39.4	5.847
21	14 38 0.67	2.1787	10 4 0.4	9.549	21	16 21 55.11	2.1560	16 15 27.6	5.759
22	14 40 11.36	2.1778	10 13 31.4	9.482	22	16 24 4.46	2.1557	16 21 10.5	5.671
23	14 42 22.00	2.1769	10 22 58.3	9.414	23	16 26 13.79	2.1554	16 26 48.1	5.582
24	14 44 32.59	2.1761	S. 10 32 21.1	9.346	24	16 28 23.11	2.1551	S. 16 32 20.4	5.493

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
TUESDAY 25.					THURSDAY 27.				
0	16 ^h 28 ^m 23.11	2.1551	S. 16° 32' 20.4"	5.493	0	18 ^h 11 ^m 23.63	2.1221	S. 19° 10' 39.8"	1.970
1	16 30 32.41	2.1549	16 37 47.3	5.404	1	18 13 31.53	2.1219	19 11 41.2	0.975
2	16 32 41.70	2.1547	16 43 8.9	5.315	2	18 15 39.38	2.1204	19 12 37.1	0.985
3	16 34 50.97	2.1544	16 48 25.1	5.226	3	18 17 47.18	2.1226	19 13 27.4	0.792
4	16 37 0.23	2.1541	16 53 36.0	5.137	4	18 19 54.92	2.1226	19 14 12.1	0.699
5	16 39 9.47	2.1538	16 58 41.5	5.047	5	18 22 2.61	2.1277	19 14 51.2	0.606
6	16 41 18.69	2.1536	17 3 41.6	4.957	6	18 24 10.24	2.1268	19 15 24.8	0.513
7	16 43 27.90	2.1533	17 8 36.3	4.866	7	18 26 17.81	2.1228	19 15 52.8	0.421
8	16 45 37.09	2.1530	17 13 25.5	4.776	8	18 28 25.33	2.1248	19 16 15.3	0.329
9	16 47 46.26	2.1527	17 18 9.3	4.685	9	18 30 32.79	2.1228	19 16 32.3	0.237
10	16 49 55.41	2.1524	17 22 47.7	4.594	10	18 32 40.18	2.1228	19 16 43.7	0.145
11	16 52 4.54	2.1521	17 27 20.6	4.503	11	18 34 47.51	2.1217	19 16 49.6	0.053
12	16 54 13.66	2.1518	17 31 48.1	4.413	12	18 36 54.79	2.1207	19 16 50.0	0.069
13	16 56 22.76	2.1514	17 36 10.1	4.321	13	18 39 2.00	2.1196	19 16 44.9	0.131
14	16 58 31.83	2.1511	17 40 26.6	4.230	14	18 41 9.14	2.1184	19 16 34.3	0.223
15	17 0 40.88	2.1508	17 44 37.6	4.138	15	18 43 16.21	2.1178	19 16 18.2	0.314
16	17 2 49.92	2.1505	17 48 43.1	4.045	16	18 45 23.22	2.1169	19 15 56.6	0.406
17	17 4 58.94	2.1501	17 52 43.1	3.953	17	18 47 30.16	2.1151	19 15 29.5	0.497
18	17 7 7.93	2.1497	17 56 37.5	3.861	18	18 49 37.03	2.1139	19 14 57.0	0.588
19	17 9 16.90	2.1495	18 0 26.4	3.769	19	18 51 43.83	2.1127	19 14 19.1	0.678
20	17 11 25.85	2.1490	18 4 9.8	3.676	20	18 53 50.55	2.1116	19 13 35.7	0.769
21	17 13 34.77	2.1485	18 7 47.6	3.584	21	18 55 57.20	2.1103	19 12 46.9	0.860
22	17 15 43.67	2.1481	18 11 19.9	3.492	22	18 58 3.78	2.1091	19 11 52.6	0.949
23	17 17 52.54	2.1477	S. 18 14 46.7	3.400	23	19 0 10.28	2.1078	S. 19 10 52.9	1.039
WEDNESDAY 26.					FRIDAY 28.				
0	17 20 1.39	2.1473	S. 18 18 7.9	3.307	0	19 2 16.71	2.1065	S. 19 9 47.9	1.129
1	17 22 10.21	2.1469	18 21 23.5	3.214	1	19 4 23.06	2.1051	19 8 37.5	1.218
2	17 24 19.00	2.1463	18 24 33.6	3.121	2	19 6 29.32	2.1036	19 7 21.7	1.306
3	17 26 27.76	2.1456	18 27 38.1	3.028	3	19 8 35.51	2.1025	19 6 0.6	1.397
4	17 28 36.50	2.1453	18 30 37.0	2.935	4	19 10 41.62	2.1012	19 4 34.1	1.486
5	17 30 45.21	2.1446	18 33 30.3	2.843	5	19 12 47.65	2.0998	19 3 2.3	1.575
6	17 32 53.88	2.1443	18 36 18.0	2.749	6	19 14 53.59	2.0983	19 1 25.1	1.664
7	17 35 2.52	2.1436	18 39 0.1	2.655	7	19 16 59.45	2.0969	18 59 42.6	1.753
8	17 37 11.13	2.1433	18 41 36.6	2.563	8	19 19 5.22	2.0955	18 57 54.9	1.840
9	17 39 19.71	2.1427	18 44 7.5	2.469	9	19 21 10.91	2.0941	18 56 1.9	1.927
10	17 41 28.25	2.1421	18 46 32.9	2.376	10	19 23 16.51	2.0927	18 54 3.7	2.014
11	17 43 36.75	2.1414	18 48 52.7	2.283	11	19 25 22.02	2.0913	18 52 0.3	2.101
12	17 45 45.22	2.1408	18 51 6.8	2.189	12	19 27 27.45	2.0897	18 49 51.6	2.188
13	17 47 53.65	2.1402	18 53 15.3	2.096	13	19 29 32.78	2.0881	18 47 37.7	2.275
14	17 50 2.04	2.1396	18 55 18.2	2.003	14	19 31 38.02	2.0865	18 45 18.6	2.361
15	17 52 10.39	2.1389	18 57 15.5	1.909	15	19 33 43.17	2.0851	18 42 54.4	2.447
16	17 54 18.71	2.1383	18 59 7.3	1.816	16	19 35 48.23	2.0836	18 40 25.0	2.533
17	17 56 26.98	2.1376	19 0 53.5	1.723	17	19 37 53.19	2.0819	18 37 50.5	2.618
18	17 58 35.21	2.1368	19 2 34.0	1.630	18	19 39 58.06	2.0803	18 35 10.8	2.703
19	18 0 43.40	2.1361	19 4 8.9	1.536	19	19 42 2.83	2.0787	18 32 26.0	2.788
20	18 2 51.54	2.1353	19 5 38.3	1.443	20	19 44 7.51	2.0771	18 29 36.2	2.873
21	18 4 59.63	2.1346	19 7 2.0	1.349	21	19 46 12.09	2.0755	18 26 41.3	2.957
22	18 7 7.68	2.1337	19 8 20.2	1.256	22	19 48 16.57	2.0739	18 23 41.3	3.041
23	18 9 15.68	2.1329	19 9 32.8	1.163	23	19 50 20.95	2.0722	18 20 36.3	3.124
24	18 11 23.63	2.1321	S. 19 10 39.8	1.070	24	19 52 25.23	2.0706	S. 18 17 26.4	3.206

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
-------	------------------	-------------------	--------------	-------------------	-------	------------------	-------------------	--------------	-------------------

SATURDAY 29.

0	19 52 25.23	2.0706	S.18° 17' 26.4	3.306
1	19 54 29.41	2.0699	18 14 11.4	3.291
2	19 56 33.50	2.0679	18 10 51.5	3.274
3	19 58 37.48	2.0664	18 7 26.6	3.256
4	20 0 41.35	2.0637	18 3 56.8	3.237
5	20 2 45.12	2.0620	18 0 22.1	3.218
6	20 4 48.79	2.0608	17 56 42.6	3.200
7	20 6 52.36	2.0586	17 52 58.2	3.181
8	20 8 55.82	2.0569	17 49 8.9	3.161
9	20 10 59.18	2.0551	17 45 14.8	3.141
10	20 13 2.43	2.0533	17 41 16.0	4.021
11	20 15 5.57	2.0516	17 37 12.4	4.100
12	20 17 8.61	2.0497	17 33 4.0	4.179
13	20 19 11.54	2.0479	17 28 50.9	4.258
14	20 21 14.36	2.0461	17 24 33.1	4.336
15	20 23 17.07	2.0443	17 20 10.6	4.413
16	20 25 19.68	2.0426	17 15 43.5	4.490
17	20 27 22.18	2.0407	17 11 11.7	4.567
18	20 29 24.57	2.0389	17 6 35.4	4.644
19	20 31 26.85	2.0371	17 1 54.5	4.720
20	20 33 29.02	2.0353	16 57 9.0	4.796
21	20 35 31.08	2.0334	16 52 19.0	4.871
22	20 37 33.03	2.0316	16 47 24.5	4.946
23	20 39 34.87	2.0298	S.16 42 25.5	5.021

SUNDAY 30.

0	20 41 36.60	2.0280	S.16 37 22.0	5.095
1	20 43 38.22	2.0261	16 32 14.1	5.168
2	20 45 39.73	2.0243	16 27 1.8	5.241
3	20 47 41.13	2.0223	16 21 45.2	5.313
4	20 49 42.41	2.0206	16 16 24.2	5.385
5	20 51 43.58	2.0187	16 10 58.9	5.457
6	20 53 44.65	2.0169	16 5 29.3	5.529
7	20 55 45.61	2.0150	15 59 55.4	5.600
8	20 57 46.45	2.0133	15 54 17.3	5.670
9	20 59 47.19	2.0113	15 48 35.0	5.740
10	21 1 47.81	2.0096	15 42 48.5	5.809
11	21 3 48.32	2.0076	15 36 57.9	5.878
12	21 5 48.72	2.0068	15 31 3.1	5.947
13	21 7 49.01	2.0039	15 25 4.2	6.016
14	21 9 49.19	2.0021	15 19 1.3	6.083
15	21 11 49.26	2.0003	15 12 54.3	6.150
16	21 13 49.23	1.9985	15 6 43.3	6.217
17	21 15 49.09	1.9967	15 0 28.3	6.283
18	21 17 48.83	1.9949	14 54 9.4	6.348
19	21 19 48.47	1.9931	14 47 46.6	6.413
20	21 21 48.00	1.9913	14 41 19.9	6.478
21	21 23 47.42	1.9895	14 34 49.3	6.543
22	21 25 46.74	1.9877	14 28 14.9	6.608
23	21 27 45.95	1.9859	14 21 36.7	6.668
24	21 29 45.05	1.9841	S.14 14 54.7	6.731

MONDAY 31.

0	21 29 45.05	1.9841	S.14° 14' 54.7	6.731
1	21 31 44.05	1.9824	14 8 8.9	6.793
2	21 33 42.94	1.9806	14 1 19.5	6.854
3	21 35 41.73	1.9789	13 54 26.4	6.915
4	21 37 40.41	1.9773	13 47 29.7	6.976
5	21 39 38.99	1.9755	13 40 29.3	7.036
6	21 41 37.47	1.9738	13 33 25.4	7.096
7	21 43 35.85	1.9721	13 26 17.9	7.154
8	21 45 34.12	1.9704	13 19 6.9	7.213
9	21 47 32.30	1.9688	13 11 52.4	7.271
10	21 49 30.38	1.9671	13 4 34.4	7.328
11	21 51 28.36	1.9655	12 57 13.0	7.385
12	21 53 26.25	1.9639	12 49 48.2	7.441
13	21 55 24.04	1.9623	12 42 20.1	7.497
14	21 57 21.73	1.9607	12 34 48.6	7.552
15	21 59 19.33	1.9592	12 27 13.8	7.607
16	22 1 16.83	1.9577	12 19 35.8	7.661
17	22 3 14.25	1.9562	12 11 54.5	7.714
18	22 5 11.57	1.9546	12 4 10.1	7.767
19	22 7 8.80	1.9531	11 56 22.5	7.820
20	22 9 5.94	1.9516	11 48 31.7	7.872
21	22 11 2.99	1.9502	11 40 37.8	7.923
22	22 12 59.96	1.9487	11 32 40.9	7.974
23	22 14 56.84	1.9473	S.11 24 40.9	8.024

TUESDAY, SEPTEMBER 1.

0	22 16 53.63	1.9459	S.11 16 38.0	8.074
---	-------------	--------	--------------	-------

PHASES OF THE MOON.

○	Full Moon, . . .	d	h	m
☾	Last Quarter, . .	11	0	28.3
●	New Moon, . . .	17	17	11.4
☾	First Quarter, . .	24	12	46.8

☾	Apogee,	d	h
☾	Perigee,	17	10.6
☾	Apogee,	30	14.8

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Dist.	III ^h .	P. L. of Dist.	VI ^h .	P. L. of Dist.	IX ^h .	P. L. of Dist.
1	Spica W.	85° 49' 14"	3060	87° 18' 13"	3063	88° 47' 9"	3066	90° 16' 1"	3069
	Saturn W.	48 36 16	3044	50 5 34	3047	51 34 49	3050	53 4 0	3053
	Antares W.	40 29 54	3178	41 56 29	3174	43 23 9	3170	44 49 54	3166
	Fomalhaut E.	49 46 22	3555	48 26 59	3553	47 8 6	3513	45 49 46	3547
	α Pegasi E.	64 23 2	3438	63 1 23	3445	61 40 1	3463	60 18 55	3479
	Jupiter E.	86 37 15	3039	85 7 50	3041	83 38 28	3044	82 9 10	3047
	α Arietis E.	107 13 13	3193	105 46 56	3195	104 20 41	3196	102 54 27	3198
2	Saturn W.	60 29 9	3064	61 58 3	3066	63 26 54	3068	64 55 43	3069
	Antares W.	52 4 36	3153	53 31 41	3155	54 58 47	3161	56 25 55	3149
	α Pegasi E.	53 38 14	3576	52 19 13	3598	51 0 36	3523	49 42 26	3550
	Jupiter E.	74 43 32	3080	73 14 33	3082	71 45 37	3064	70 16 43	3066
	α Arietis E.	95 43 41	3304	94 17 37	3306	92 51 34	3307	91 25 33	3309
3	Saturn W.	72 19 23	3075	73 48 3	3075	75 16 43	3076	76 45 22	3077
	Antares W.	63 41 58	3143	65 9 15	3143	66 36 34	3141	68 3 54	3140
	Jupiter E.	62 52 38	3071	61 23 53	3073	59 55 9	3073	58 26 26	3073
	α Arietis E.	84 15 59	3317	82 50 10	3319	81 24 23	3320	79 58 38	3323
4	Saturn W.	84 8 34	3076	85 37 13	3075	87 5 53	3074	88 34 34	3073
	Antares W.	75 20 54	3132	76 48 23	3133	78 15 53	3131	79 43 25	3129
	Jupiter E.	51 2 51	3073	49 34 7	3073	48 5 23	3071	46 36 38	3070
	α Arietis E.	72 50 25	3321	71 24 53	3324	69 59 24	3326	68 33 58	3329
	Aldebaran E.	104 41 45	3067	103 12 55	3066	101 44 4	3066	100 15 12	3065
5	Saturn W.	95 58 23	3085	97 27 15	3084	98 56 9	3081	100 25 6	3086
	Antares W.	87 1 42	3119	88 29 29	3117	89 57 18	3114	91 25 10	3111
	α Aquilæ W.	45 3 51	4166	46 12 49	4169	47 22 42	4066	48 33 26	4009
	Jupiter E.	39 12 34	3064	37 43 40	3063	36 14 44	3060	34 45 46	3056
	α Arietis E.	61 27 35	3333	60 2 29	3336	58 37 29	3322	57 12 33	3356
	Aldebaran E.	92 50 28	3055	91 21 25	3054	89 52 19	3052	88 23 10	3048
	Mars E.	109 5 32	3325	107 41 49	3331	106 18 2	3319	104 54 12	3316
6	α Aquilæ W.	54 37 57	3815	55 52 44	3784	57 8 3	3754	58 23 53	3726
	α Arietis E.	50 9 20	3397	48 45 5	3395	47 20 59	3314	45 57 4	3325
	Aldebaran E.	80 56 28	3083	79 26 55	3073	77 57 16	3073	76 27 32	3018
	Mars E.	97 54 4	3397	96 29 49	3392	95 5 28	3387	93 41 1	3382
	Venus E.	118 43 47	3030	117 14 12	3038	115 44 34	3025	114 14 52	3023
7	α Aquilæ W.	64 49 58	3507	66 8 25	3507	67 27 14	3507	68 46 24	3548
	Aldebaran E.	68 57 19	3591	67 26 55	3585	65 56 24	3578	64 25 44	3573
	Mars E.	86 37 15	3363	85 12 8	3347	83 46 54	3340	82 21 32	3323
	Venus E.	106 45 21	3002	105 15 11	3006	103 44 56	2993	102 14 35	2986
8	α Aquilæ W.	75 27 14	3463	76 48 19	3446	78 9 41	3433	79 31 20	3418
	Fomalhaut W.	41 36 18	3618	42 54 33	3570	44 13 40	3526	45 33 35	3496
	Aldebaran E.	56 50 8	3533	55 18 30	3534	53 46 42	3515	52 14 42	3505
	Mars E.	75 12 23	3191	73 46 3	3192	72 19 32	3173	70 52 50	3163
	Venus E.	94 41 1	3567	93 9 54	3560	91 38 38	3542	90 7 12	3535
	SUN E.	125 7 13	3288	123 42 47	3377	122 18 9	3366	120 53 20	3357
9	α Aquilæ W.	86 23 36	3351	87 46 48	3338	89 10 15	3326	90 33 56	3316
	Fomalhaut W.	52 23 42	3314	53 47 37	3296	55 12 6	3287	56 37 8	3230
	α Pegasi W.	39 11 17	3727	40 27 35	3663	41 45 3	3600	43 3 37	3545
	Aldebaran E.	44 31 33	2853	42 58 14	2842	41 24 41	2831	39 50 53	2818

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Dist.	XVh.	P. L. of Dist.	XVIIIh.	P. L. of Dist.	XXIh.	P. L. of Dist.
1	Spica W.	91° 44' 49"	3073	93° 13' 33"	3074	94° 42' 14"	3075	96° 10' 51"	3080
	Saturn W.	54 33 8	3066	56 2 13	3066	57 31 14	3060	59 0 13	3062
	Antares W.	46 16 44	3169	47 43 37	3160	49 10 34	3166	50 37 34	3156
	Fomalhaut E.	44 32 2	3092	43 14 56	3723	41 58 32	3705	40 42 53	3613
	α Pegasi E.	58 58 7	3496	57 37 38	3613	56 17 28	3632	54 57 39	3554
	Jupiter E.	80 39 56	3040	79 10 45	3043	77 41 38	3056	76 12 34	3037
	α Arietis E.	101 26 15	3198	100 2 4	3200	98 35 55	3201	97 9 47	3203
2	Saturn W.	66 24 30	3071	67 53 15	3073	69 21 59	3075	70 50 42	3074
	Antares W.	57 53 5	3148	59 20 16	3147	60 47 29	3146	62 14 43	3145
	α Pegasi E.	48 24 46	3090	47 7 38	3711	45 51 3	3746	44 35 5	3755
	Jupiter E.	68 47 51	3067	67 19 1	3068	65 50 12	3060	64 21 24	3070
	α Arietis E.	89 59 35	3210	88 33 38	3212	87 7 43	3214	85 41 50	3215
3	Saturn W.	78 14 0	3077	79 42 38	3076	81 11 17	3076	82 39 56	3077
	Antares W.	69 31 15	3139	70 58 37	3136	72 26 1	3136	73 53 27	3135
	Jupiter E.	56 57 43	3073	55 29 0	3073	54 0 17	3073	52 31 34	3073
	α Arietis E.	78 32 55	3224	77 7 14	3226	75 41 36	3228	74 16 0	3229
4	Saturn W.	90 3 17	3072	91 32 1	3071	93 0 46	3069	94 29 33	3067
	Antares W.	81 11 0	3127	82 38 37	3125	84 6 16	3123	85 33 58	3121
	Jupiter E.	45 7 52	3069	43 39 5	3066	42 10 16	3067	40 41 26	3065
	α Arietis E.	67 8 35	3242	65 43 15	3244	64 17 58	3247	62 52 45	3250
	Aldebaran E.	98 46 19	3063	97 17 24	3061	95 48 27	3060	94 19 29	3058
5	Saturn W.	101 54 7	3068	103 23 11	3062	104 52 19	3049	106 21 31	3047
	Antares W.	92 53 6	3109	94 21 5	3105	95 49 8	3103	97 17 14	3100
	α Aquilæ W.	49 44 57	3064	50 57 12	3022	52 10 9	3084	53 23 45	3049
	Jupiter E.	33 16 45	3065	31 47 42	3064	30 18 36	3062	28 49 27	3060
	α Arietis E.	55 47 41	3270	54 22 55	3276	52 58 16	3292	51 33 44	3269
	Aldebaran E.	86 53 57	3046	85 24 41	3043	83 55 21	3039	82 25 57	3035
	Mars E.	103 30 19	3212	102 6 22	3206	100 42 20	3205	99 18 14	3201
6	α Aquilæ W.	59 40 13	3099	60 57 1	3075	62 14 15	3061	63 31 54	3028
	α Arietis E.	44 33 21	3237	43 9 52	3260	41 46 38	3265	40 23 42	3262
	Aldebaran E.	74 57 42	3014	73 27 46	3009	71 57 44	3003	70 27 35	2997
	Mars E.	92 16 29	3277	90 51 51	3271	89 27 6	3265	88 2 14	3259
	Venus E.	112 45 7	3019	111 15 18	3016	109 45 24	3011	108 15 25	3007
7	α Aquilæ W.	70 5 55	3030	71 25 46	3012	72 45 57	3005	74 6 27	3000
	Aldebaran E.	62 54 56	3065	61 23 59	3067	59 52 52	3049	58 21 35	3041
	Mars E.	80 56 1	3225	79 30 21	3217	78 4 32	3209	76 38 33	3199
	Venus E.	100 44 7	3092	99 13 32	3077	97 42 50	3070	96 12 0	2963
8	α Aquilæ W.	80 53 16	3404	82 15 28	3391	83 37 55	3377	85 0 38	3364
	Fomalhaut W.	46 54 15	3447	48 15 38	3412	49 37 41	3378	51 0 23	3345
	Aldebaran E.	50 42 30	3095	49 10 5	3095	47 37 28	3076	46 4 38	2964
	Mars E.	69 25 57	3163	67 58 51	3143	66 31 33	3123	65 4 2	3121
	Venus E.	88 35 37	2926	87 3 51	2916	85 31 55	2909	83 59 48	2900
	SUN E.	119 28 18	3247	118 3 4	3236	116 37 37	3235	115 11 57	3214
9	α Aquilæ W.	91 57 50	3293	93 21 58	3283	94 46 18	3262	96 10 51	3271
	Fomalhaut W.	58 2 42	3294	59 28 47	3178	60 55 22	3163	62 22 27	3129
	α Pegasi W.	44 23 11	3423	45 43 43	3444	47 5 10	3396	48 27 29	3356
	Aldebaran E.	38 16 49	2906	36 42 29	2793	35 7 52	2781	33 32 59	2767

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of DM.	IIIh.	P. L. of DM.	VIh.	P. L. of DM.	IXh.	P. L. of DM.
9	Mars E.	63° 36' 18"	3110	62° 8' 20"	3098	60° 40' 8"	3086	59° 11' 41"	3074
	Venus E.	82 27 29	2991	80 54 58	2880	78 22 14	2870	77 49 17	2860
	SUN E.	113 46 4	3203	112 19 57	3188	110 53 34	3178	109 26 56	3163
10	Fomalhaut W.	63 50 1	3106	65 18 3	3098	66 46 33	3061	68 15 30	3039
	α Pegasi W.	49 50 36	3316	51 14 30	3276	52 39 9	3240	54 4 31	3208
	Jupiter W.	21 56 34	2773	23 31 38	2744	25 7 5	2736	26 42 54	2721
	Aldebaran E.	31 57 48	2753	30 22 19	2740	28 46 32	2726	27 10 26	2711
	Mars E.	51 45 37	3009	50 15 36	2996	48 45 17	2981	47 14 41	2967
	Venus E.	70 1 1	2992	68 26 36	2791	66 51 56	2778	65 16 59	2765
	SUN E.	102 9 44	3093	100 41 25	3078	99 12 48	3063	97 43 52	3047
11	Fomalhaut W.	75 46 54	2985	77 18 28	2915	78 50 28	2895	80 22 53	2878
	α Pegasi W.	61 21 16	3050	62 50 27	3021	64 20 14	2993	65 50 35	2968
	Jupiter W.	34 47 38	2637	36 25 43	2620	38 4 11	2603	39 43 2	2586
	Mars E.	39 37 12	2606	38 4 48	2681	36 32 5	2667	34 59 4	2643
	Venus E.	57 17 50	2696	55 41 5	2681	54 4 0	2666	52 26 35	2652
	SUN E.	90 14 17	2964	88 43 19	2946	87 11 59	2929	85 40 17	2912
12	α Pegasi W.	73 30 21	2845	75 3 51	2822	76 37 50	2800	78 12 18	2778
	Jupiter W.	48 3 16	2497	49 44 33	2480	51 26 14	2463	53 8 21	2444
	α Arietis W.	30 16 53	3128	31 44 32	3043	33 13 41	2996	34 44 13	2994
	Venus E.	44 14 27	2676	42 34 59	2659	40 55 8	2644	39 14 56	2628
	SUN E.	77 56 4	2920	76 22 2	2801	74 47 36	2783	73 12 45	2763
13	α Pegasi W.	86 11 35	2678	87 48 45	2660	89 28 19	2643	91 4 17	2625
	Jupiter W.	61 45 18	2354	63 29 59	2337	65 15 5	2319	67 0 37	2300
	α Arietis W.	42 34 10	2689	44 11 5	2652	45 48 50	2616	47 27 23	2583
	Venus E.	30 48 36	2463	29 6 17	2439	27 23 38	2426	25 40 40	2412
	SUN E.	65 12 14	2669	63 34 52	2650	61 57 5	2631	60 18 52	2612
14	α Pegasi W.	99 19 36	2661	100 59 38	2639	102 39 57	2628	104 20 31	2616
	Jupiter W.	75 54 41	2316	77 42 44	2300	79 31 12	2284	81 20 4	2168
	α Arietis W.	55 50 53	2440	57 33 31	2416	59 16 44	2391	61 0 31	2369
	Aldebaran W.	22 0 18	2924	23 48 10	2207	25 36 27	2191	27 25 8	2176
	SUN E.	52 1 30	2823	50 20 47	2606	48 39 41	2486	46 58 11	2472
15	Jupiter W.	90 30 8	2098	92 21 13	2083	94 12 38	2071	96 4 22	2060
	α Arietis W.	69 47 1	2973	71 33 41	2256	73 20 46	2240	75 8 14	2226
	Aldebaran W.	36 34 11	2106	38 25 3	2091	40 16 16	2079	42 7 48	2067
	SUN E.	38 25 1	2896	36 41 20	2381	34 57 18	2366	33 12 57	2356
20	SUN W.	32 10 38	2423	33 53 41	2438	35 36 22	2459	37 18 39	2473
	Saturn E.	59 32 1	2149	57 42 16	2164	55 52 54	2180	54 3 56	2196
	Antares E.	68 32 42	2303	66 44 19	2230	64 56 21	2237	63 8 49	2266
21	SUN W.	45 44 3	2560	47 23 53	2579	49 3 17	2598	50 42 15	2617
	Saturn E.	45 5 21	2283	43 18 57	2303	41 33 0	2321	39 47 31	2341
	Antares E.	54 18 8	2366	52 33 30	2379	50 49 25	2403	49 5 53	2426
	α Aquilæ E.	101 36 50	2776	100 1 49	2786	98 27 3	2799	96 52 34	2814
22	SUN W.	58 50 27	2716	60 26 46	2736	62 2 38	2766	63 38 4	2776
	Saturn E.	31 7 22	2444	29 24 50	2466	27 42 49	2489	26 1 20	2513
	Antares E.	40 37 3	2660	38 57 13	2691	37 18 5	2623	35 39 41	2647
	α Aquilæ E.	89 5 14	2699	87 32 54	2920	86 1 0	2940	84 29 32	2962

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Dist.	XVh.	P. L. of Dist.	XVIIIh.	P. L. of Dist.	XXIh.	P. L. of Dist.
9	Mars E.	57° 43' 0"	3061	56° 14' 3"	3046	54° 44' 50"	3035	53° 15' 21"	3023
	Venus E.	76 16 6	3048	74 42 41	3038	73 9 8	3027	71 35 10	3016
	SUN E.	108 0 3	3150	106 32 54	3136	105 5 28	3123	103 37 45	3107
10	Fomalhaut W.	69 44 54	3018	71 14 45	3007	72 45 2	3076	74 15 45	3065
	α Pegasi W.	55 30 34	3173	56 57 17	3138	58 24 40	3108	59 52 40	3078
	Jupiter W.	26 19 6	2704	29 55 40	2687	31 32 37	2671	33 9 56	2654
	Aldebaran E.	25 34 1	2696	23 57 16	2661	22 20 11	2658	20 42 46	2650
	Mars E.	45 43 47	2954	44 12 36	2939	42 41 6	2924	41 9 18	2910
	Venus E.	63 41 45	3751	62 6 13	3738	60 30 24	3724	58 54 16	3710
	SUN E.	96 14 38	3091	94 45 4	3014	93 15 9	3008	91 44 54	2991
11	Fomalhaut W.	81 55 42	2857	83 28 56	2836	85 2 34	2820	86 36 36	2801
	α Pegasi W.	67 21 28	2943	68 52 54	2916	70 24 52	2892	71 57 21	2868
	Jupiter W.	41 22 16	2569	43 1 54	2551	44 41 57	2533	46 22 24	2515
	Mars E.	33 25 45	2630	31 52 8	2626	30 18 14	2613	28 44 3	2601
	Venus E.	50 48 51	2638	49 10 47	2621	47 32 21	2606	45 58 34	2591
	SUN E.	84 8 13	2994	82 35 46	2976	81 2 56	2967	79 29 42	2958
12	α Pegasi W.	79 47 15	2756	81 22 40	2736	82 58 32	2716	84 34 50	2696
	Jupiter W.	54 50 53	2426	56 33 51	2408	58 17 14	2390	60 1 3	2373
	α Arietis W.	36 16 2	2660	37 49 1	2618	39 23 5	2772	40 58 9	2739
	Venus E.	37 34 23	2613	35 53 28	2498	34 12 12	2488	32 30 35	2467
	SUN E.	71 37 29	2744	70 1 48	2726	68 25 42	2707	66 49 11	2687
13	α Pegasi W.	92 42 38	2600	94 21 21	2598	96 0 26	2578	97 39 51	2564
	Jupiter W.	68 46 36	2233	70 33 0	2267	72 19 48	2249	74 7 2	2233
	α Arietis W.	49 6 42	2561	50 46 45	2522	52 27 28	2493	54 8 51	2465
	Venus E.	23 57 23	2401	22 13 50	2391	20 30 2	2382	18 46 1	2375
	SUN E.	58 40 14	2594	57 1 11	2576	55 21 42	2567	53 41 48	2540
14	α Pegasi W.	106 1 19	2510	107 42 19	2503	109 23 30	2495	111 4 50	2490
	Jupiter W.	83 9 20	2153	84 58 59	2138	86 49 0	2124	88 39 23	2109
	α Arietis W.	62 44 50	2348	64 29 39	2327	66 14 59	2306	68 0 47	2290
	Aldebaran W.	29 14 12	2161	31 3 39	2146	32 53 28	2132	34 43 39	2118
	SUN E.	45 16 18	2455	43 34 2	2439	41 51 23	2424	40 8 22	2410
15	Jupiter W.	97 56 25	2048	99 48 45	2037	101 41 22	2026	103 34 15	2017
	α Arietis W.	76 56 3	2212	78 44 13	2199	80 32 42	2188	82 21 28	2176
	Aldebaran W.	43 59 38	2056	45 51 46	2046	47 44 10	2035	49 36 50	2026
	SUN E.	31 28 18	2343	29 43 21	2332	27 58 8	2321	26 12 39	2311
20	SUN W.	39 0 32	2488	40 42 2	2506	42 23 7	2523	44 3 48	2542
	Saturn E.	52 15 22	2212	50 27 13	2230	48 39 30	2247	46 52 12	2265
	Antares E.	61 21 43	2274	59 35 5	2294	57 48 56	2314	56 3 17	2335
21	SUN W.	52 20 47	2637	53 58 52	2657	55 36 30	2676	57 13 42	2696
	Saturn E.	38 2 31	2380	36 17 59	2381	34 33 57	2402	32 50 25	2422
	Antares E.	47 22 54	2450	45 40 30	2476	43 58 43	2503	42 17 34	2530
	α Aquilæ E.	95 18 24	2629	93 44 34	2645	92 11 5	2662	90 37 58	2680
22	SUN W.	65 13 3	2706	66 47 36	2816	68 21 44	2835	69 55 26	2855
	Saturn E.	24 20 25	2598	22 40 5	2604	21 0 20	2591	19 21 13	2573
	Antares E.	34 2 4	2695	32 25 17	2734	30 49 22	2777	29 14 24	2824
	α Aquilæ E.	82 58 31	2984	81 27 58	3008	79 57 53	3030	78 28 18	3056

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position	Noon.	P. L. of Dist.	III ^h .	P. L. of Dist.	VI ^h .	P. L. of Dist.	IX ^h .	P. L. of Dist.
23	SUN W.	71° 28' 43"	2874	73° 1' 35"	2894	74° 34' 1"	2914	76° 6' 2"	2932
	Spica W.	21 12 23	2753	22 47 52	2746	24 23 31	2742	25 59 15	2742
	α Aquilæ E.	76 59 13	3080	75 30 39	3108	74 2 37	3133	72 35 7	3161
24	SUN W.	83 40 17	3024	85 10 0	3042	86 39 21	3059	88 8 21	3076
	Spica W.	33 56 51	2774	35 31 53	2783	37 6 43	2794	38 41 19	2803
	α Aquilæ E.	65 26 16	3313	64 2 19	3346	62 39 1	3381	61 16 23	3417
	Fomalhaut E.	98 15 52	2977	96 45 10	2991	95 14 46	3006	93 44 40	3020
25	SUN W.	95 28 21	3155	96 55 24	3170	98 22 9	3184	99 48 37	3198
	Spica W.	46 30 46	2860	48 3 56	2871	49 36 52	2883	51 9 33	2893
	α Aquilæ E.	54 33 59	3624	53 15 51	3672	51 58 34	3723	50 42 11	3776
	Fomalhaut E.	86 18 41	3064	84 50 24	3109	83 22 25	3124	81 54 45	3139
	α Pegasi E.	101 3 30	3138	99 36 6	3148	98 8 55	3169	96 41 57	3199
26	SUN W.	106 56 58	3262	108 21 54	3274	109 46 36	3284	111 11 6	3296
	Spica W.	58 49 38	2946	60 21 0	2954	61 52 11	2963	63 23 10	2972
	Saturn W.	21 8 16	2979	22 38 55	2992	24 9 30	2997	25 39 59	2999
	Fomalhaut E.	74 40 58	3316	73 15 8	3331	71 49 36	3347	70 24 23	3363
	α Pegasi E.	89 30 20	3226	88 4 40	3236	86 39 14	3247	85 14 1	3259
	Jupiter E.	112 55 15	2986	111 22 38	2996	109 50 14	2998	108 18 2	2916
27	SUN W.	118 10 34	3343	119 33 56	3361	120 57 8	3369	122 20 11	3386
	Spica W.	70 55 24	3012	72 25 22	3019	73 55 11	3026	75 24 52	3033
	Saturn W.	33 10 38	3022	34 40 24	3026	36 10 2	3033	37 39 34	3039
	Antares W.	26 15 56	3306	27 40 0	3283	29 4 31	3265	30 29 24	3248
	Fomalhaut E.	63 23 2	3347	61 59 45	3366	60 36 49	3384	59 14 14	3402
	α Pegasi E.	78 11 14	3316	76 47 21	3327	75 23 41	3339	74 0 15	3351
	Jupiter E.	100 39 58	2968	99 8 53	2966	97 37 56	2972	96 7 8	2979
	Spica W.	82 51 23	3080	84 20 22	3066	85 49 15	3069	87 18 3	3073
28	Saturn W.	45 5 37	3063	46 34 32	3066	48 3 23	3070	49 32 9	3074
	Antares W.	37 37 40	3199	39 3 50	3194	40 30 6	3189	41 56 28	3184
	Fomalhaut E.	52 27 1	3512	51 6 50	3536	49 47 6	3564	48 27 52	3593
	α Pegasi E.	67 6 37	3416	65 44 38	3429	64 22 54	3443	63 1 26	3456
	Jupiter E.	88 35 6	3006	87 5 1	3011	85 35 2	3016	84 5 9	3019
	Spica W.	82 51 23	3080	84 20 22	3066	85 49 15	3069	87 18 3	3073
29	Saturn W.	56 54 59	3067	58 23 24	3080	59 51 47	3091	61 20 7	3092
	Antares W.	49 9 26	3169	50 36 12	3187	52 3 1	3165	53 29 52	3163
	Fomalhaut E.	42 0 19	3774	40 44 50	3820	39 30 9	3872	38 16 21	3926
	α Pegasi E.	56 18 32	3544	54 58 56	3563	53 39 41	3586	52 20 50	3608
	Jupiter E.	76 36 45	3084	75 7 14	3086	73 37 46	3088	72 8 20	3040
	α Arietis E.	98 37 17	3212	97 11 23	3214	95 45 30	3216	94 19 39	3216
30	Saturn W.	68 41 31	3096	70 9 46	3096	71 38 0	3096	73 6 15	3096
	Antares W.	60 44 47	3162	62 11 54	3160	63 39 3	3148	65 6 15	3146
	α Pegasi E.	45 53 24	3751	44 37 31	3786	43 22 16	3828	42 7 43	3873
	Jupiter E.	64 41 35	3043	63 12 16	3043	61 42 57	3043	60 13 38	3043
	α Arietis E.	87 10 37	3220	85 44 52	3220	84 19 7	3231	82 53 23	3221
31	Saturn W.	80 27 45	3089	81 56 8	3088	83 24 32	3087	84 52 58	3084
	Antares W.	72 22 55	3133	73 50 24	3130	75 17 57	3126	76 45 33	3126
	Jupiter E.	52 46 49	3088	51 17 23	3087	49 47 56	3084	48 18 26	3033
	α Arietis E.	75 44 51	3225	74 19 11	3225	72 53 32	3226	71 27 54	3227
	Aldebaran E.	107 42 56	3063	106 14 3	3063	104 45 8	3061	103 16 11	3060

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Dist.	XVh.	P. L. of Dist.	XVIIIh.	P. L. of Dist.	XXIh.	P. L. of Dist.
23	SUN W.	77° 37' 40"	2951	79° 8' 54"	2970	80° 39' 44"	2988	82° 10' 12"	3008
	Spica W.	27 34 59	2744	29 10 40	2750	30 46 13	2757	32 21 37	2765
	α Aquilæ E.	71 8 11	3189	69 41 49	3219	68 16 2	3249	66 50 51	3280
24	SUN W.	89 37 1	3092	91 5 20	3108	92 33 20	3124	94 1 0	3140
	Spica W.	40 15 41	2916	41 49 49	2927	43 23 42	2938	44 57 21	2948
	α Aquilæ E.	59 54 26	3455	58 33 12	3484	57 12 41	3485	55 52 56	3479
	Fomalhaut E.	92 14 52	3034	90 45 22	3049	89 16 10	3064	87 47 16	3079
25	SUN W.	101 14 49	3212	102 40 44	3226	104 6 24	3238	105 31 48	3250
	Spica W.	52 42 1	2904	54 14 15	2914	55 46 16	2925	57 18 3	2935
	α Aquilæ E.	49 26 44	3533	48 12 16	3584	46 58 50	3595	45 46 29	4029
	Fomalhaut E.	80 27 23	3154	79 0 19	3170	77 33 34	3186	76 7 7	3200
	α Pegasi E.	95 15 11	3180	93 48 38	3192	92 22 19	3203	90 56 13	3214
26	SUN W.	112 35 23	3306	113 59 28	3316	115 23 21	3325	116 47 3	3335
	Spica W.	64 53 58	2961	66 24 35	2969	67 55 1	2997	69 25 17	3005
	Saturn W.	27 10 21	2998	28 40 36	3004	30 10 44	3009	31 40 45	3016
	Fomalhaut E.	68 59 28	3379	67 34 52	3386	66 10 36	3393	64 46 39	3390
	α Pegasi E.	83 49 1	3370	82 24 14	3382	80 59 41	3393	79 35 21	3304
	Jupiter E.	106 46 3	2925	105 14 16	2938	103 42 39	2942	102 11 13	2960
27	SUN W.	123 43 6	3374	125 5 52	3380	126 28 31	3387	127 51 2	3398
	Spica W.	76 54 24	3039	78 23 49	3044	79 53 7	3060	81 22 18	3065
	Saturn W.	39 8 59	3043	40 38 18	3049	42 7 30	3064	43 36 36	3068
	Antares W.	31 54 36	3235	33 20 4	3234	34 45 45	3214	36 11 38	3208
	Fomalhaut E.	57 52 0	3423	56 30 9	3444	55 8 42	3466	53 47 39	3486
	α Pegasi E.	72 37 3	3364	71 14 5	3376	69 51 21	3388	68 28 51	3402
	Jupiter E.	94 36 29	2965	93 5 58	2981	91 35 34	2997	90 5 17	3001
28	Spica W.	88 46 46	3077	90 15 24	3079	91 43 59	3082	93 12 30	3088
	Saturn W.	51 0 50	3078	52 29 27	3080	53 58 1	3092	55 26 32	3096
	Antares W.	43 22 56	3181	44 49 28	3178	46 16 4	3193	47 42 43	3172
	Fomalhaut E.	47 9 10	3623	45 51 1	3667	44 33 28	3693	43 16 33	3731
	α Pegasi E.	61 40 15	3474	60 19 22	3489	58 58 46	3506	57 38 29	3526
	Jupiter E.	82 35 20	3023	81 5 35	3026	79 35 55	3030	78 6 19	3031
29	Saturn W.	62 48 26	3093	64 16 44	3098	65 45 0	3095	67 13 16	3096
	Antares W.	54 56 46	3160	56 23 43	3166	57 50 42	3157	59 17 43	3154
	Fomalhaut E.	37 3 30	3991	35 51 42	4092	34 41 3	4140	33 31 40	4229
	α Pegasi E.	51 2 24	3632	49 44 24	3669	48 26 53	3687	47 9 52	3718
	Jupiter E.	70 38 57	3041	69 9 35	3043	67 40 14	3043	66 10 54	3043
	α Arietis E.	92 53 48	3216	91 27 58	3218	90 2 10	3219	88 36 23	3220
30	Saturn W.	74 34 31	3096	76 2 47	3093	77 31 5	3092	78 59 24	3091
	Antares W.	66 33 29	3143	68 0 46	3141	69 28 6	3138	70 55 29	3136
	α Pegasi E.	40 53 56	3923	39 40 59	3976	38 28 56	4087	37 17 53	4104
	Jupiter E.	58 44 18	3042	57 14 57	3042	55 45 36	3040	54 16 13	3039
	α Arietis E.	81 27 39	3222	80 1 56	3222	78 36 13	3223	77 10 31	3225
31	Saturn W.	86 21 27	3082	87 49 58	3080	89 18 32	3078	90 47 9	3074
	Antares W.	78 13 12	3122	79 40 55	3119	81 8 41	3116	82 36 31	3113
	Jupiter E.	46 48 54	3081	45 19 20	3029	43 49 43	3026	42 20 3	3024
	α Arietis E.	70 2 17	3228	68 36 41	3229	67 11 6	3221	65 45 33	3221
	Aldebaran E.	101 47 12	3057	100 18 10	3055	98 49 5	3062	97 19 57	3048

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S						Sideral Time of the Semi-diameter passing the Meridian.	Equation of Time, to be subtracted from Apparent Time.	Diff. for 1 hour.	
		Apparent Right Ascension.		Diff. for 1 hour.	Apparent Declination.		Diff. for 1 hour.				Semi-diameter.
		^h ^m ^s	[°] ['] ["]		[°] ['] ["]	[°] ['] ["]					
Tues.	1	10 43 25.67	9.064	N. 8 5 51.3	54.63	15 53.88	64.40	0 16.56	0.791		
Wed.	2	10 47 3.03	9.053	7 43 56.6	54.95	15 54.11	64.36	0 35.69	0.803		
Thur.	3	10 50 40.13	9.042	7 21 54.4	55.26	15 54.35	64.32	0 55.09	0.814		
Fri.	4	10 54 16.98	9.033	6 59 44.9	55.55	15 54.59	64.28	1 14.74	0.824		
Sat.	5	10 57 53.61	9.024	6 37 28.5	55.83	15 54.83	64.24	1 34.61	0.833		
Sun.	6	11 1 30.02	9.016	6 15 5.6	56.10	15 55.07	64.21	1 54.69	0.841		
Mon.	7	11 5 6.24	9.009	5 52 36.4	56.35	15 55.31	64.18	2 14.97	0.848		
Tues.	8	11 8 42.30	9.003	5 30 1.2	56.59	15 55.55	64.15	2 35.41	0.854		
Wed.	9	11 12 18.24	8.997	5 7 20.4	56.82	15 55.80	64.13	2 55.97	0.859		
Thur.	10	11 15 54.04	8.992	4 44 34.5	57.04	15 56.05	64.11	3 16.66	0.864		
Fri.	11	11 19 29.73	8.988	4 21 43.6	57.24	15 56.29	64.09	3 37.46	0.868		
Sat.	12	11 23 5.34	8.985	3 58 47.8	57.43	15 56.54	64.08	3 58.36	0.872		
Sun.	13	11 26 40.87	8.982	3 35 47.7	57.60	15 56.80	64.07	4 19.31	0.875		
Mon.	14	11 30 16.35	8.980	3 12 43.6	57.76	15 57.05	64.06	4 40.33	0.877		
Tues.	15	11 33 51.80	8.979	2 49 36.0	57.90	15 57.31	64.06	5 1.38	0.878		
Wed.	16	11 37 27.23	8.978	2 26 25.1	58.03	15 57.57	64.06	5 22.45	0.878		
Thur.	17	11 41 2.65	8.978	2 3 11.1	58.15	15 57.84	64.06	5 43.52	0.878		
Fri.	18	11 44 38.08	8.979	1 39 54.6	58.25	15 58.11	64.06	6 4.58	0.877		
Sat.	19	11 48 13.53	8.980	1 16 35.8	58.33	15 58.38	64.07	6 25.62	0.875		
Sun.	20	11 51 49.04	8.982	0 53 15.3	58.40	15 58.65	64.08	6 46.61	0.873		
Mon.	21	11 55 24.61	8.985	0 29 53.2	58.46	15 58.92	64.09	7 7.54	0.870		
Tues.	22	11 59 0.27	8.989	N. 0 6 29.8	58.50	15 59.19	64.10	7 28.37	0.866		
Wed.	23	12 2 36.08	8.994	S. 0 16 54.4	58.53	15 59.47	64.12	7 49.10	0.861		
Thur.	24	12 6 11.90	9.000	0 40 19.1	58.54	15 59.75	64.14	8 9.73	0.856		
Fri.	25	12 9 47.90	9.006	1 3 43.7	58.54	16 0.03	64.17	8 30.22	0.849		
Sat.	26	12 13 24.07	9.013	1 27 8.1	58.52	16 0.31	64.20	8 50.55	0.843		
Sun.	27	12 17 0.43	9.021	1 50 32.0	58.49	16 0.59	64.23	9 10.69	0.835		
Mon.	28	12 20 36.99	9.030	2 13 55.0	58.45	16 0.87	64.26	9 30.62	0.826		
Tues.	29	12 24 13.78	9.040	2 37 16.8	58.39	16 1.15	64.30	9 50.33	0.816		
Wed.	30	12 27 50.82	9.051	3 0 37.0	58.32	16 1.43	64.34	10 9.79	0.805		
Thur.	31	12 31 28.13	9.063	S. 3 23 55.3	58.23	16 1.71	64.38	10 28.98	0.793		

NOTE. — Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sideral Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be added to Mean Time.	Diff. for 1 hour.	Sidereal Time.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.			
		^h ^m ^s	^s	[°] ['] ["]	^s		^s	^h ^m ^s
Tues.	1	10 43 25.71	9.064	N. 8° 5' 51.1"	54.63	0 16.56	0.791	10 43 42.27
Wed.	2	10 47 3.12	9.053	7 43 56.1	54.95	0 35.70	0.803	10 47 38.82
Thur.	3	10 50 40.27	9.042	7 21 53.6	55.26	0 35.11	0.814	10 51 35.38
Fri.	4	10 54 17.17	9.033	6 59 43.7	55.55	1 14.76	0.824	10 55 31.93
Sat.	5	10 57 53.85	9.024	6 37 27.0	55.83	1 34.63	0.833	10 59 28.48
Sun.	6	11 1 30.31	9.016	6 15 3.8	56.10	1 54.72	0.841	11 3 25.03
Mon.	7	11 5 6.58	9.009	5 52 34.3	56.35	2 15.01	0.848	11 7 21.59
Tues.	8	11 8 42.69	9.003	5 29 58.8	56.59	2 35.45	0.854	11 11 18.14
Wed.	9	11 12 18.67	8.997	5 7 17.7	56.82	2 56.02	0.859	11 15 14.69
Thur.	10	11 15 54.53	8.992	4 44 31.4	57.04	3 16.71	0.864	11 19 11.24
Fri.	11	11 19 30.28	8.988	4 21 40.1	57.24	3 37.51	0.868	11 23 7.79
Sat.	12	11 23 5.94	8.985	3 58 44.0	57.43	3 58.41	0.872	11 27 4.35
Sun.	13	11 26 41.52	8.982	3 35 43.5	57.60	4 19.37	0.875	11 31 0.89
Mon.	14	11 30 17.05	8.980	3 12 39.1	57.76	4 40.40	0.877	11 34 57.45
Tues.	15	11 33 52.55	8.979	2 49 31.2	57.90	5 1.45	0.878	11 38 54.00
Wed.	16	11 37 28.03	8.978	2 26 19.9	58.03	5 22.52	0.878	11 42 50.55
Thur.	17	11 41 3.50	8.978	2 3 5.6	58.15	5 43.61	0.878	11 46 47.11
Fri.	18	11 44 38.99	8.979	1 39 48.7	58.25	6 4.67	0.877	11 50 43.66
Sat.	19	11 48 14.50	8.980	1 16 29.6	58.33	6 25.71	0.875	11 54 40.21
Sun.	20	11 51 50.06	8.982	0 53 8.7	58.40	6 46.70	0.873	11 58 36.76
Mon.	21	11 55 25.68	8.985	0 29 46.2	58.46	7 7.64	0.870	12 2 33.32
Tues.	22	11 59 1.39	8.989	N. 0° 6' 22.5"	58.50	7 28.47	0.866	12 6 29.86
Wed.	23	12 2 37.20	8.994	S. 0 17 2.0	58.53	7 49.22	0.861	12 10 26.42
Thur.	24	12 6 13.12	9.000	0 40 27.0	58.54	8 9.85	0.856	12 14 22.97
Fri.	25	12 9 49.18	9.006	1 3 52.0	58.54	8 30.34	0.849	12 18 19.52
Sat.	26	12 13 25.40	9.013	1 27 16.8	58.52	8 50.67	0.843	12 22 16.07
Sun.	27	12 17 1.81	9.021	1 50 41.1	58.49	9 10.81	0.835	12 26 12.62
Mon.	28	12 20 38.42	9.030	2 14 4.3	58.45	9 30.76	0.826	12 30 9.18
Tues.	29	12 24 15.26	9.040	2 37 26.4	58.39	9 50.47	0.816	12 34 5.73
Wed.	30	12 27 52.35	9.051	3 0 46.9	58.32	10 9.93	0.805	12 38 2.28
Thur.	31	12 31 29.71	9.063	S. 3 24 5.4	58.23	10 29.12	0.793	12 41 58.83

Note. — The Sundialmeter for Mean Noon may be assumed the same as that for Apparent Noon.

AT GREENWICH MEAN NOON.

AT GREENWICH MEAN NOON.								
Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal Oh.
		True LONGITUDE.		Diff. for 1 hour.	LATITUDE.			
		λ	λ'					
1	245	159° 16' 47.3	16° 22.9	145.27	+0.17	0.0036798	44.4	13 14 7.28
2	246	160 14 54.8	14 30.3	145.34	+0.04	.0035728	44.6	13 10 11.38
3	247	161 13 4.0	12 39.4	145.42	-0.09	.0034651	44.7	13 6 15.47
4	248	162 11 15.0	10 50.3	145.50	0.19	.0033574	44.9	13 2 19.56
5	249	163 9 27.9	9 3.1	145.58	0.27	.0032492	45.2	12 58 23.66
6	250	164 7 42.8	7 18.0	145.66	0.32	.0031404	45.4	12 54 27.75
7	251	165 5 59.8	5 34.9	145.75	0.34	.0030309	45.7	12 50 31.84
8	252	166 4 18.8	3 53.8	145.83	0.34	.0029206	46.0	12 46 35.93
9	253	167 2 39.9	2 14.8	145.92	0.31	.0028095	46.4	12 42 40.03
10	254	168 1 3.2	0 38.0	146.01	0.24	.0026976	46.8	12 38 44.13
11	255	168 59 28.6	59 3.3	146.10	0.14	.0025848	47.2	12 34 48.22
12	256	169 57 56.2	57 30.8	146.19	-0.02	.0024710	47.7	12 30 52.32
13	257	170 56 25.9	56 0.4	146.28	+0.11	.0023560	48.2	12 26 56.41
14	258	171 54 57.6	54 32.0	146.36	0.25	.0022398	48.7	12 23 0.50
15	259	172 53 31.3	53 5.6	146.44	0.38	.0021224	49.2	12 19 4.60
16	260	173 52 7.0	51 41.3	146.52	0.51	.0020038	49.7	12 15 8.68
17	261	174 50 44.8	50 19.0	146.61	0.62	.0018839	50.2	12 11 12.77
18	262	175 49 24.5	48 58.6	146.69	0.71	.0017628	50.7	12 7 16.87
19	263	176 48 6.0	47 40.0	146.76	0.77	.0016406	51.1	12 3 20.96
20	264	177 46 49.3	46 23.2	146.84	0.81	.0015173	51.5	11 59 25.05
21	265	178 45 34.4	45 8.3	146.91	0.82	.0013931	51.9	11 55 29.15
22	266	179 44 21.3	43 55.1	146.99	0.79	.0012681	52.2	11 51 33.24
23	267	180 43 9.9	42 43.6	147.06	0.74	.0011424	52.5	11 47 37.34
24	268	181 42 0.3	41 33.9	147.13	0.66	.0010161	52.7	11 43 41.44
25	269	182 40 52.4	40 26.0	147.20	0.56	.0008894	52.8	11 39 45.54
26	270	183 39 46.3	39 19.8	147.27	0.44	.0007626	52.8	11 35 49.63
27	271	184 38 41.8	38 15.2	147.35	0.30	.0006359	52.8	11 31 53.73
28	272	185 37 39.1	37 12.4	147.42	0.16	.0005092	52.7	11 27 57.81
29	273	186 36 38.2	36 11.4	147.50	+0.02	.0003828	52.6	11 24 1.90
30	274	187 35 39.3	35 12.4	147.58	-0.09	.0002569	52.4	11 20 6.00
31	275	188 34 42.4	34 15.5	147.67	-0.19	0.0001314	52.2	11 16 10.09

NOTE: λ corresponds to the true equinox of the date, λ' to the mean equinox of January 0d.

NOTE: λ corresponds to the true equinox of the date, λ' to the mean equinox of January 0d.

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	THE MOON'S								
	SEMI- DIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.	^h ^m	^m Diff. for 1 hour.	
1	14 46.2	14 47.5	54 5.8	+0.32	54 10.3	+0.42	11 54.3	1.82	14.3
2	14 49.0	14 50.9	54 16.0	0.52	54 22.8	0.62	12 37.7	1.80	15.3
3	14 53.1	14 55.6	54 30.8	0.72	54 40.0	0.81	13 20.9	1.80	16.3
4	14 58.4	15 1.5	54 50.3	0.91	55 1.9	1.01	14 4.3	1.83	17.3
5	15 5.0	15 8.8	55 14.7	1.11	55 28.7	1.22	14 48.7	1.88	18.3
6	15 13.0	15 17.5	55 43.9	1.32	56 0.5	1.43	15 34.8	1.96	19.3
7	15 22.3	15 27.5	56 18.3	1.54	56 37.4	1.64	16 23.1	2.07	20.3
8	15 33.0	15 38.8	56 57.7	1.73	57 18.9	1.81	17 14.2	2.19	21.3
9	15 44.9	15 51.1	57 41.1	1.87	58 3.9	1.92	18 8.3	2.31	22.3
10	15 57.4	16 3.7	58 27.1	1.93	58 50.3	1.92	19 5.0	2.41	23.3
11	16 9.9	16 15.9	59 13.2	1.87	59 35.2	1.77	20 3.7	2.47	24.3
12	16 21.5	16 26.5	59 55.7	1.63	60 14.2	1.43	21 3.0	2.47	25.3
13	16 30.9	16 34.4	60 30.1	1.20	60 42.9	0.91	22 2.0	2.43	26.3
14	16 36.8	16 38.2	60 52.0	+0.59	60 57.1	+0.25	22 59.6	2.36	27.3
15	16 38.4	16 37.4	60 57.9	-0.12	60 54.1	-0.50	23 55.4	2.29	28.3
16	16 35.2	16 31.8	60 45.9	0.86	60 33.4	1.20	6		29.3
17	16 27.3	16 21.9	60 17.0	1.51	59 57.1	1.78	0 49.6	2.23	0.9
18	16 15.7	16 8.9	59 34.3	1.99	59 9.3	2.16	1 42.6	2.18	1.9
19	16 1.6	15 54.0	58 42.5	2.27	58 14.8	2.32	2 34.7	2.16	2.9
20	15 46.4	15 38.9	57 46.8	2.32	57 19.1	2.27	3 26.2	2.14	3.9
21	15 31.6	15 24.6	56 52.2	2.19	56 26.6	2.07	4 17.2	2.12	4.9
22	15 18.0	15 12.0	56 2.6	1.92	55 40.5	1.75	5 7.8	2.10	5.9
23	15 6.6	15 1.8	55 20.6	1.56	55 3.0	1.37	5 57.8	2.07	6.9
24	14 57.6	14 54.1	54 47.7	1.17	54 34.8	0.97	6 46.9	2.02	7.9
25	14 51.3	14 49.1	54 24.4	0.77	54 16.4	0.57	7 34.8	1.97	8.9
26	14 47.6	14 46.7	54 10.8	0.37	54 7.4	-0.19	8 21.5	1.92	9.9
27	14 46.4	14 46.6	54 6.2	-0.02	54 7.0	+0.14	9 7.0	1.87	10.9
28	14 47.3	14 48.5	54 9.7	+0.30	54 14.2	0.44	9 51.4	1.83	11.9
29	14 50.2	14 52.2	54 20.2	0.56	54 27.6	0.67	10 35.1	1.81	12.9
30	14 54.5	14 57.2	54 36.8	0.76	54 45.5	0.85	11 18.5	1.81	13.9
31	15 0.1	15 3.2	54 56.7	+0.92	55 8.2	+0.99	12 2.2	1.84	14.9

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Dif. for 1 m.	Declination.	Dif. for 1 m.	Hour.	Right Ascension.	Dif. for 1 m.	Declination.	Dif. for 1 m.
TUESDAY 1.					THURSDAY 3.				
0	22 16 53.63	1.9439	S. 11° 16' 38.0	8.074	0	23 49 8.45	1.9099	S. 4° 2' 51.1	9.771
1	22 18 50.34	1.9445	11 8 32.1	8.123	1	23 51 2.99	1.9099	3 53 4.2	9.792
2	22 20 46.97	1.9451	11 0 23.3	8.173	2	23 52 57.52	1.9099	3 43 16.1	9.811
3	22 22 43.52	1.9458	10 52 11.5	8.220	3	23 54 52.06	1.9091	3 33 26.9	9.830
4	22 24 39.99	1.9464	10 43 56.9	8.267	4	23 56 46.61	1.9093	3 23 36.5	9.849
5	22 26 36.38	1.9461	10 35 39.4	8.314	5	23 58 41.16	1.9095	3 13 45.0	9.867
6	22 28 32.68	1.9478	10 27 19.2	8.360	6	0 0 35.73	1.9096	3 3 52.5	9.884
7	22 30 28.91	1.9486	10 18 56.2	8.406	7	0 2 30.31	1.9097	2 53 59.0	9.901
8	22 32 25.07	1.9494	10 10 30.5	8.451	8	0 4 24.90	1.9100	2 44 4.4	9.917
9	22 34 21.16	1.9503	10 2 2.1	8.496	9	0 6 19.51	1.9103	2 34 8.9	9.933
10	22 36 17.17	1.9509	9 53 31.0	8.540	10	0 8 14.14	1.9107	2 24 12.5	9.946
11	22 38 13.11	1.9516	9 44 57.3	8.583	11	0 10 8.79	1.9111	2 14 15.2	9.962
12	22 40 8.98	1.9526	9 36 21.0	8.626	12	0 12 3.47	1.9116	2 4 17.1	9.975
13	22 42 4.78	1.9536	9 27 42.2	8.668	13	0 13 58.17	1.9119	1 54 18.2	9.988
14	22 44 0.52	1.9544	9 19 0.8	8.710	14	0 15 52.90	1.9124	1 44 18.6	10.000
15	22 45 56.19	1.9573	9 10 17.0	8.751	15	0 17 47.66	1.9130	1 34 18.3	10.012
16	22 47 51.80	1.9598	9 1 30.7	8.792	16	0 19 42.46	1.9136	1 24 17.2	10.023
17	22 49 47.35	1.9626	8 52 42.0	8.833	17	0 21 37.29	1.9148	1 14 15.5	10.033
18	22 51 42.84	1.9643	8 43 50.9	8.871	18	0 23 32.16	1.9148	1 4 13.3	10.042
19	22 53 38.27	1.9658	8 34 57.5	8.910	19	0 25 27.07	1.9155	0 54 10.5	10.051
20	22 55 33.64	1.9724	8 26 1.7	8.948	20	0 27 22.02	1.9163	0 44 7.2	10.059
21	22 57 28.96	1.9716	8 17 3.7	8.986	21	0 29 17.02	1.9170	0 34 3.4	10.067
22	22 59 24.23	1.9707	8 8 3.5	9.022	22	0 31 12.06	1.9176	0 23 59.2	10.074
23	23 1 19.45	1.9198	S. 7° 59' 1.1	9.058	23	0 33 7.16	1.9187	S. 0° 13' 54.6	10.080
WEDNESDAY 2.					FRIDAY 4.				
0	23 3 14.61	1.9190	S. 7° 49' 56.5	9.094	0	0 35 2.31	1.9196	S. 0° 3' 49.6	10.086
1	23 5 9.73	1.9193	7 40 49.8	9.139	1	0 36 57.52	1.9206	N. 0° 6' 15.7	10.091
2	23 7 4.80	1.9174	7 31 41.0	9.184	2	0 38 52.78	1.9216	0 16 21.3	10.095
3	23 8 59.83	1.9167	7 22 30.1	9.198	3	0 40 48.10	1.9226	0 26 27.1	10.098
4	23 10 54.81	1.9160	7 13 17.2	9.231	4	0 42 43.49	1.9237	0 36 33.1	10.101
5	23 12 49.75	1.9153	7 4 2.3	9.264	5	0 44 38.94	1.9248	0 46 39.2	10.103
6	23 14 44.65	1.9147	6 54 45.5	9.296	6	0 46 34.46	1.9259	0 56 45.5	10.105
7	23 16 39.52	1.9143	6 45 26.8	9.328	7	0 48 30.05	1.9271	1 6 51.9	10.107
8	23 18 34.35	1.9136	6 36 6.2	9.359	8	0 50 25.71	1.9284	1 16 58.3	10.107
9	23 20 29.15	1.9130	6 26 43.8	9.389	9	0 52 21.45	1.9297	1 27 4.7	10.107
10	23 22 23.91	1.9123	6 17 19.5	9.419	10	0 54 17.27	1.9310	1 37 11.1	10.106
11	23 24 18.65	1.9121	6 7 53.5	9.448	11	0 56 13.17	1.9323	1 47 17.4	10.103
12	23 26 13.36	1.9116	5 58 25.7	9.477	12	0 58 9.15	1.9337	1 57 23.5	10.101
13	23 28 8.04	1.9113	5 48 56.2	9.505	13	1 0 5.92	1.9352	2 7 29.5	10.098
14	23 30 2.70	1.9108	5 39 25.1	9.532	14	1 2 1.37	1.9367	2 17 35.3	10.094
15	23 31 57.34	1.9106	5 29 52.4	9.558	15	1 3 57.61	1.9382	2 27 40.8	10.089
16	23 33 51.96	1.9103	5 20 18.1	9.584	16	1 5 53.95	1.9398	2 37 46.0	10.084
17	23 35 46.56	1.9099	5 10 42.3	9.610	17	1 7 50.39	1.9414	2 47 50.9	10.078
18	23 37 41.15	1.9096	5 1 4.9	9.636	18	1 9 46.92	1.9431	2 57 55.4	10.071
19	23 39 35.72	1.9094	4 51 26.1	9.660	19	1 11 43.55	1.9448	3 7 59.5	10.064
20	23 41 30.28	1.9092	4 41 45.8	9.683	20	1 13 40.29	1.9465	3 18 3.1	10.056
21	23 43 24.83	1.9091	4 32 4.1	9.706	21	1 15 37.13	1.9483	3 28 6.2	10.046
22	23 45 19.37	1.9090	4 22 21.1	9.728	22	1 17 34.08	1.9501	3 38 8.8	10.036
23	23 47 13.91	1.9090	4 12 36.7	9.750	23	1 19 31.14	1.9520	3 48 10.8	10.026
24	23 49 8.45	1.9089	S. 4° 2' 51.1	9.771	24	1 21 28.32	1.9539	N. 3° 58' 12.2	10.017

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SATURDAY 5.					MONDAY 7.				
0	1 21 28.32	1.9639	N. 3° 58' 12.2	10.017	0	2 58 17.47	2.0000	N. 11° 32' 15.8	8.600
1	1 23 25.62	1.9639	4 8 12.9	10.006	1	3 0 23.35	2.0000	11 40 50.3	8.600
2	1 25 23.03	1.9679	4 18 12.9	9.993	2	3 2 29.46	2.0000	11 49 21.8	8.600
3	1 27 20.57	1.9680	4 28 12.1	9.980	3	3 4 35.81	2.1078	11 57 50.2	8.648
4	1 29 18.23	1.9631	4 38 10.5	9.966	4	3 6 42.40	2.1118	12 6 15.6	8.696
5	1 31 16.02	1.9643	4 48 8.0	9.952	5	3 8 49.23	2.1160	12 14 37.8	8.743
6	1 33 13.93	1.9664	4 58 4.7	9.937	6	3 10 56.31	2.1200	12 22 56.8	8.789
7	1 35 11.98	1.9686	5 8 0.5	9.921	7	3 13 3.63	2.1241	12 31 12.5	8.836
8	1 37 10.16	1.9700	5 17 55.2	9.904	8	3 15 11.20	2.1282	12 39 25.0	8.879
9	1 39 8.48	1.9722	5 27 48.9	9.887	9	3 17 19.02	2.1324	12 47 34.1	8.923
10	1 41 6.94	1.9756	5 37 41.6	9.869	10	3 19 27.09	2.1366	12 55 39.7	8.966
11	1 43 5.55	1.9780	5 47 33.2	9.850	11	3 21 35.41	2.1408	13 3 41.8	9.007
12	1 45 4.30	1.9804	5 57 23.6	9.830	12	3 23 43.99	2.1450	13 11 40.5	9.047
13	1 47 3.20	1.9829	6 7 12.8	9.810	13	3 25 52.82	2.1493	13 19 35.6	9.087
14	1 49 2.25	1.9854	6 17 0.8	9.789	14	3 28 1.91	2.1536	13 27 27.0	9.126
15	1 51 1.45	1.9880	6 26 47.5	9.767	15	3 30 11.26	2.1580	13 35 14.7	9.164
16	1 53 0.81	1.9906	6 36 32.8	9.744	16	3 32 20.87	2.1623	13 42 58.7	9.201
17	1 55 0.33	1.9932	6 46 16.7	9.720	17	3 34 30.74	2.1667	13 50 38.9	9.238
18	1 57 0.00	1.9959	6 55 59.2	9.696	18	3 36 40.87	2.1711	13 58 15.3	9.274
19	1 58 59.84	1.9987	7 5 40.2	9.671	19	3 38 51.27	2.1756	14 5 47.7	9.308
20	2 0 59.85	2.0015	7 15 19.8	9.646	20	3 41 1.93	2.1799	14 13 16.2	9.341
21	2 3 0.03	2.0043	7 24 57.8	9.619	21	3 43 12.86	2.1844	14 20 40.7	9.374
22	2 5 0.37	2.0072	7 34 34.1	9.591	22	3 45 24.06	2.1889	14 28 1.1	9.406
23	2 7 0.69	2.0102	N. 7° 44' 8.7	9.563	23	3 47 35.53	2.1934	N. 14° 35' 17.4	9.437
SUNDAY 6.					TUESDAY 8.				
0	2 9 1.59	2.0131	N. 7° 53' 41.7	9.534	0	3 49 47.27	2.3979	N. 14° 42' 29.5	7.167
1	2 11 2.47	2.0161	8 3 12.9	9.506	1	3 51 59.28	2.4025	14 49 37.3	7.096
2	2 13 3.59	2.0191	8 12 42.3	9.475	2	3 54 11.57	2.4070	14 56 40.9	7.023
3	2 15 4.76	2.0222	8 22 9.9	9.444	3	3 56 24.13	2.4116	15 3 40.1	6.960
4	2 17 6.19	2.0253	8 31 35.6	9.412	4	3 58 36.96	2.4162	15 10 34.9	6.876
5	2 19 7.81	2.0285	8 40 59.3	9.379	5	4 0 50.07	2.4208	15 17 25.2	6.801
6	2 21 9.61	2.0317	8 50 21.1	9.346	6	4 3 3.45	2.4254	15 24 11.0	6.726
7	2 23 11.61	2.0349	8 59 40.8	9.311	7	4 5 17.11	2.4300	15 30 52.2	6.648
8	2 25 13.80	2.0382	9 8 58.4	9.276	8	4 7 31.05	2.4346	15 37 28.8	6.570
9	2 27 16.19	2.0415	9 18 13.9	9.240	9	4 9 45.27	2.4392	15 44 0.7	6.492
10	2 29 18.79	2.0449	9 27 27.2	9.205	10	4 11 59.77	2.4439	15 50 27.9	6.413
11	2 31 21.59	2.0483	9 36 38.2	9.169	11	4 14 14.55	2.4486	15 56 50.3	6.332
12	2 33 24.59	2.0517	9 45 47.0	9.132	12	4 16 29.60	2.4533	16 3 7.8	6.250
13	2 35 27.80	2.0551	9 54 53.5	9.095	13	4 18 44.94	2.4580	16 9 20.4	6.168
14	2 37 31.22	2.0587	10 3 57.5	9.048	14	4 21 0.56	2.4626	16 15 28.0	6.086
15	2 39 34.85	2.0623	10 12 59.1	9.006	15	4 23 16.46	2.4672	16 21 30.6	6.001
16	2 41 38.70	2.0660	10 21 58.2	8.964	16	4 25 32.63	2.4719	16 27 28.1	5.916
17	2 43 42.77	2.0696	10 30 54.8	8.922	17	4 27 49.08	2.4766	16 33 20.5	5.830
18	2 45 47.05	2.0733	10 39 48.8	8.879	18	4 30 5.82	2.4812	16 39 7.7	5.743
19	2 47 51.56	2.0770	10 48 40.2	8.834	19	4 32 22.84	2.4859	16 44 49.7	5.656
20	2 49 56.29	2.0807	10 57 28.9	8.789	20	4 34 40.13	2.4906	16 50 26.3	5.568
21	2 52 1.94	2.0844	11 6 14.8	8.743	21	4 36 57.70	2.4953	16 55 57.6	5.477
22	2 54 6.42	2.0881	11 14 58.0	8.696	22	4 39 15.56	2.5000	17 1 23.5	5.385
23	2 56 11.83	2.0919	11 23 38.4	8.648	23	4 41 33.70	2.5046	17 6 43.9	5.294
24	2 58 17.47	2.0959	N. 11° 32' 15.8	8.600	24	4 43 52.11	2.5092	N. 17° 11' 58.8	5.201

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
WEDNESDAY 9.					FRIDAY 11.				
0	4 43 52.11	2.3092	N.17° 11' 58.8	5.201	0	6 39 34.75	2.4961	N.19° 19' 0.7	5.190
1	4 46 10.80	2.3128	17 17 8.1	5.108	1	6 42 4.60	2.4988	19 18 45.4	0.316
2	4 48 29.77	2.3166	17 22 11.8	5.015	2	6 44 34.60	2.5018	19 18 22.5	0.446
3	4 50 49.02	2.3221	17 27 9.8	4.918	3	6 47 4.75	2.5038	19 17 51.9	0.576
4	4 53 8.54	2.3277	17 32 2.0	4.822	4	6 49 35.05	2.5062	19 17 13.5	0.704
5	4 55 28.34	2.3322	17 36 48.5	4.726	5	6 52 5.49	2.5086	19 16 27.4	0.832
6	4 57 48.41	2.3368	17 41 29.1	4.628	6	6 54 36.07	2.5108	19 15 33.5	0.962
7	5 0 8.75	2.3412	17 46 3.8	4.528	7	6 57 6.79	2.5130	19 14 31.9	1.092
8	5 2 29.37	2.3456	17 50 32.5	4.428	8	6 59 37.63	2.5161	19 13 22.5	1.222
9	5 4 50.26	2.3504	17 54 55.2	4.328	9	7 2 8.59	2.5171	19 12 5.3	1.352
10	5 7 11.42	2.3549	17 59 11.9	4.227	10	7 4 39.68	2.5190	19 10 40.2	1.482
11	5 9 32.85	2.3593	18 3 22.5	4.126	11	7 7 10.88	2.5209	19 9 7.3	1.612
12	5 11 54.54	2.3638	18 7 26.9	4.021	12	7 9 42.19	2.5227	19 7 26.6	1.744
13	5 14 16.50	2.3682	18 11 25.0	3.917	13	7 12 13.61	2.5246	19 5 38.0	1.876
14	5 16 38.73	2.3726	18 15 16.9	3.812	14	7 14 45.13	2.5262	19 3 41.6	2.006
15	5 19 1.22	2.3769	18 19 2.5	3.707	15	7 17 16.75	2.5278	19 1 37.3	2.137
16	5 21 23.96	2.3812	18 22 41.7	3.601	16	7 19 48.46	2.5292	18 59 25.2	2.268
17	5 23 46.96	2.3855	18 26 14.5	3.493	17	7 22 20.25	2.5306	18 57 5.2	2.399
18	5 26 10.22	2.3898	18 29 40.8	3.384	18	7 24 52.13	2.5319	18 54 37.3	2.530
19	5 28 33.73	2.3940	18 33 0.6	3.275	19	7 27 24.09	2.5332	18 52 1.5	2.662
20	5 30 57.50	2.3982	18 36 13.8	3.166	20	7 29 56.12	2.5344	18 49 17.9	2.793
21	5 33 21.52	2.4024	18 39 20.4	3.054	21	7 32 28.22	2.5356	18 46 26.4	2.925
22	5 35 45.79	2.4066	18 42 20.3	2.943	22	7 35 0.38	2.5366	18 43 26.9	3.056
23	5 38 10.30	2.4108	N.18 45 13.5	2.831	23	7 37 32.60	2.5376	N.18 40 19.6	3.187
THURSDAY 10.					SATURDAY 12.				
0	5 40 35.06	2.4147	N.18 48 0.0	2.718	0	7 40 4.88	2.5384	N.18 37 4.4	3.316
1	5 43 0.06	2.4187	18 50 39.7	2.604	1	7 42 37.21	2.5392	18 33 41.4	3.449
2	5 45 25.30	2.4226	18 53 12.5	2.489	2	7 45 9.58	2.5399	18 30 10.5	3.580
3	5 47 50.77	2.4266	18 55 38.4	2.374	3	7 47 41.99	2.5406	18 26 31.8	3.710
4	5 50 16.48	2.4304	18 57 57.4	2.258	4	7 50 14.44	2.5410	18 22 45.3	3.841
5	5 52 42.42	2.4342	19 0 9.4	2.142	5	7 52 46.92	2.5416	18 18 51.0	3.971
6	5 55 8.58	2.4380	19 2 14.4	2.026	6	7 55 19.42	2.5419	18 14 48.8	4.101
7	5 57 34.97	2.4417	19 4 12.3	1.907	7	7 57 51.94	2.5422	18 10 38.9	4.230
8	6 0 1.58	2.4454	19 6 3.2	1.788	8	8 0 24.48	2.5425	18 6 21.2	4.360
9	6 2 28.41	2.4490	19 7 46.9	1.668	9	8 2 57.04	2.5427	18 1 55.8	4.489
10	6 4 55.46	2.4526	19 9 23.4	1.548	10	8 5 29.60	2.5428	17 57 22.6	4.617
11	6 7 22.72	2.4560	19 10 52.7	1.428	11	8 8 2.16	2.5428	17 52 41.7	4.745
12	6 9 50.18	2.4594	19 12 14.7	1.306	12	8 10 34.73	2.5427	17 47 53.2	4.873
13	6 12 17.85	2.4628	19 13 29.4	1.184	13	8 13 7.29	2.5425	17 42 57.0	5.000
14	6 14 45.72	2.4662	19 14 36.8	1.062	14	8 15 39.83	2.5422	17 37 53.2	5.127
15	6 17 13.79	2.4695	19 15 36.8	0.939	15	8 18 12.36	2.5420	17 32 41.8	5.253
16	6 19 42.06	2.4727	19 16 29.5	0.816	16	8 20 44.87	2.5416	17 27 22.8	5.379
17	6 22 10.52	2.4758	19 17 14.7	0.692	17	8 23 17.36	2.5412	17 21 56.3	5.504
18	6 24 39.16	2.4789	19 17 52.5	0.567	18	8 25 49.82	2.5407	17 16 22.3	5.629
19	6 27 7.99	2.4820	19 18 22.8	0.442	19	8 28 22.25	2.5402	17 10 40.8	5.753
20	6 29 37.00	2.4849	19 18 45.5	0.316	20	8 30 54.64	2.5396	17 4 51.9	5.877
21	6 32 6.18	2.4878	19 19 0.7	0.190	21	8 33 26.99	2.5388	16 58 55.6	6.000
22	6 34 35.54	2.4906	19 19 8.3	0.064	22	8 35 59.29	2.5380	16 52 51.9	6.122
23	6 37 5.06	2.4934	19 19 8.3	0.063	23	8 38 31.55	2.5372	16 46 40.9	6.243
24	6 39 34.75	2.4961	N.19 19 0.7	0.190	24	8 41 3.75	2.5362	N.16 40 22.7	6.364

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
-------	------------------	-------------------	--------------	-------------------	-------	------------------	-------------------	--------------	-------------------

SUNDAY 13.

0	h m s	°	N. 16° 40' 22.7	5.364
1	8 41 3.75	2.4307	16 33 57.2	6.486
2	8 46 7.97	2.4342	16 27 24.5	6.604
3	8 48 39.99	2.4331	16 20 44.7	6.733
4	8 51 11.94	2.4319	16 13 57.8	6.841
5	8 53 43.82	2.4307	16 7 3.9	6.966
6	8 56 15.02	2.4298	16 0 2.9	7.074
7	8 58 47.34	2.4279	15 52 55.0	7.180
8	9 1 18.97	2.4266	15 45 40.2	7.268
9	9 3 50.52	2.4261	15 38 18.6	7.417
10	9 6 21.98	2.4256	15 30 50.2	7.529
11	9 8 53.24	2.4249	15 23 15.1	7.641
12	9 11 24.61	2.4203	15 15 33.3	7.762
13	9 13 55.78	2.4186	15 7 44.9	7.892
14	9 16 26.84	2.4180	14 59 49.9	7.971
15	9 18 57.80	2.4161	14 51 48.4	8.078
16	9 21 28.65	2.4132	14 43 40.6	8.184
17	9 23 59.39	2.4113	14 35 26.4	8.280
18	9 26 30.01	2.4094	14 27 5.9	8.398
19	9 29 0.51	2.4074	14 18 39.1	8.497
20	9 31 30.90	2.4064	14 10 6.2	8.609
21	9 34 1.17	2.4063	14 1 27.2	8.700
22	9 36 31.30	2.4013	13 52 42.2	8.800
23	9 39 1.31	2.4092	N. 13° 43' 51.3	8.898

TUESDAY 15.

0	h m s	°	N. 9° 34' 7.8	10.986
1	10 40 44.91	2.4367	9 23 9.8	10.998
2	10 43 11.03	2.4339	9 12 8.1	11.066
3	10 45 36.98	2.4312	9 1 2.8	11.118
4	10 48 2.77	2.4286	8 49 53.9	11.176
5	10 50 28.41	2.4259	8 38 41.6	11.233
6	10 52 53.88	2.4239	8 27 26.0	11.288
7	10 55 19.19	2.4204	8 16 7.1	11.343
8	11 0 9.31	2.4160	8 4 45.0	11.398
9	11 2 34.13	2.4123	7 53 19.9	11.443
10	11 4 58.78	2.4096	7 41 51.8	11.492
11	11 7 23.27	2.4068	7 30 20.8	11.540
12	11 9 47.60	2.4041	7 18 47.0	11.588
13	11 12 11.77	2.4014	7 7 10.5	11.630
14	11 14 35.77	2.3987	6 55 31.4	11.673
15	11 16 59.61	2.3961	6 43 49.8	11.714
16	11 19 23.30	2.3934	6 32 5.7	11.753
17	11 21 46.83	2.3906	6 20 19.3	11.791
18	11 24 10.19	2.3881	6 8 30.8	11.828
19	11 26 33.29	2.3854	5 56 40.1	11.863
20	11 28 56.44	2.3828	5 44 47.3	11.896
21	11 31 19.33	2.3802	5 32 52.6	11.928
22	11 33 42.06	2.3776	5 20 56.0	11.968
23	11 36 4.64	2.3750	N. 5° 8' 57.7	11.998

MONDAY 14.

0	h m s	°	N. 13° 34' 54.4	8.986
1	9 41 31.20	2.4070	13 25 51.7	9.092
2	9 44 0.95	2.4047	13 16 43.3	9.187
3	9 46 30.56	2.4028	13 7 29.2	9.281
4	9 49 0.04	2.4003	12 58 9.6	9.373
5	9 51 29.39	2.4079	12 48 44.5	9.464
6	9 53 58.60	2.4066	12 39 13.9	9.554
7	9 56 27.66	2.4032	12 29 38.0	9.643
8	9 58 56.58	2.4006	12 19 56.8	9.730
9	10 1 25.35	2.4784	12 10 10.4	9.816
10	10 3 53.98	2.4734	12 0 18.9	9.901
11	10 6 22.46	2.4734	11 50 22.3	9.984
12	10 8 50.79	2.4709	11 40 20.8	10.066
13	10 11 18.97	2.4684	11 30 14.4	10.147
14	10 13 47.00	2.4658	11 20 3.2	10.226
15	10 16 14.87	2.4633	11 9 47.3	10.303
16	10 18 42.59	2.4607	10 59 26.9	10.379
17	10 21 10.15	2.4581	10 49 1.9	10.453
18	10 23 37.55	2.4554	10 38 32.5	10.526
19	10 26 4.80	2.4528	10 27 58.7	10.598
20	10 28 31.89	2.4501	10 17 20.7	10.668
21	10 30 58.81	2.4475	10 6 38.5	10.737
22	10 33 25.57	2.4448	9 55 52.2	10.804
23	10 35 52.18	2.4421	9 45 1.9	10.870
24	10 38 18.63	2.4394	N. 9° 34' 7.8	10.935

WEDNESDAY 16.

0	h m s	°	N. 4° 56' 57.7	12.018
1	11 38 27.06	2.3724	4 44 56.1	12.038
2	11 40 49.33	2.3698	4 32 53.1	12.062
3	11 43 11.44	2.3673	4 20 48.7	12.084
4	11 45 33.40	2.3648	4 8 43.0	12.108
5	11 47 55.22	2.3623	3 56 36.1	12.134
6	11 50 16.89	2.3598	3 44 28.1	12.149
7	11 52 38.40	2.3573	3 32 19.1	12.168
8	11 54 59.77	2.3549	3 20 9.1	12.173
9	11 57 20.99	2.3525	3 7 58.3	12.186
10	12 0 2.00	2.3501	2 55 46.8	12.197
11	12 2 23.79	2.3477	2 43 34.7	12.207
12	12 4 44.43	2.3453	2 31 22.0	12.216
13	12 6 64.43	2.3429	2 19 8.9	12.222
14	12 8 25.30	2.3406	2 6 55.4	12.228
15	12 10 45.53	2.3383	1 54 41.6	12.233
16	12 12 56.62	2.3360	1 42 27.6	12.234
17	12 15 16.52	2.3338	1 30 13.5	12.235
18	12 17 25.58	2.3316	1 17 59.4	12.234
19	12 19 45.41	2.3294	1 5 45.4	12.232
20	12 21 5.11	2.3272	0 53 31.6	12.228
21	12 23 24.67	2.3250	0 41 18.0	12.223
22	12 25 44.10	2.3228	0 29 4.8	12.217
23	12 27 44.10	2.3207	0 16 52.0	12.210
24	12 29 44.10	2.3186	N. 0° 4' 39.6	12.200

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
THURSDAY 17.					SATURDAY 19.				
0	12 34 41.64	2.3165	N. 0° 4' 39.6"	12.900	0	14 23 59.66	2.2468	S. 9° 5' 32.7"	10.579
1	12 37 0.57	2.3145	S. 0° 7' 32.1"	12.189	1	14 26 14.44	2.2459	9 15 47.5	10.213
2	12 39 19.38	2.3125	0 19 43.1	12.177	2	14 28 29.17	2.2450	9 25 58.3	10.147
3	12 41 38.07	2.3105	0 31 53.4	12.164	3	14 30 43.85	2.2442	9 36 5.1	10.080
4	12 43 56.64	2.3085	0 44 2.8	12.149	4	14 32 58.47	2.2433	9 46 7.9	10.012
5	12 46 15.09	2.3065	0 56 11.3	12.133	5	14 35 13.04	2.2424	9 56 6.6	9.943
6	12 48 33.43	2.3047	1 8 18.8	12.115	6	14 37 27.56	2.2416	10 6 1.0	9.873
7	12 50 51.66	2.3028	1 20 25.2	12.096	7	14 39 42.03	2.2408	10 15 51.2	9.803
8	12 53 9.77	2.3010	1 32 30.3	12.076	8	14 41 56.45	2.2400	10 25 37.2	9.730
9	12 55 27.78	2.2992	1 44 34.2	12.054	9	14 44 10.82	2.2392	10 35 18.9	9.656
10	12 57 45.67	2.2973	1 56 36.8	12.031	10	14 46 25.15	2.2384	10 44 56.2	9.585
11	13 0 3.45	2.2955	2 8 38.0	12.007	11	14 48 39.43	2.2376	10 54 29.1	9.511
12	13 2 21.13	2.2938	2 20 37.6	11.981	12	14 50 53.66	2.2368	11 3 57.5	9.437
13	13 4 38.71	2.2921	2 32 35.6	11.953	13	14 53 7.85	2.2361	11 13 21.5	9.363
14	13 6 56.18	2.2904	2 44 32.0	11.925	14	14 55 21.99	2.2354	11 22 40.9	9.288
15	13 9 13.55	2.2887	2 56 26.6	11.896	15	14 57 36.09	2.2347	11 31 55.8	9.209
16	13 11 30.82	2.2870	3 8 19.5	11.866	16	14 59 50.15	2.2340	11 41 6.0	9.132
17	13 13 47.99	2.2854	3 20 10.5	11.833	17	15 2 4.17	2.2333	11 50 11.6	9.054
18	13 16 5.07	2.2838	3 31 59.5	11.800	18	15 4 18.14	2.2326	11 59 12.5	8.976
19	13 18 22.05	2.2823	3 43 46.5	11.766	19	15 6 32.07	2.2319	12 8 8.7	8.897
20	13 20 38.94	2.2807	3 55 31.3	11.729	20	15 8 45.97	2.2312	12 17 0.1	8.817
21	13 22 55.74	2.2792	4 7 13.9	11.692	21	15 10 59.82	2.2305	12 25 46.7	8.737
22	13 25 12.44	2.2777	4 18 54.3	11.654	22	15 13 13.63	2.2298	12 34 28.5	8.656
23	13 27 29.06	2.2762	S. 4° 30' 32.4"	11.614	23	15 15 27.40	2.2292	S. 12° 43' 5.4"	8.574
FRIDAY 18.					SUNDAY 20.				
0	13 29 45.59	2.2747	S. 4° 42' 8.0"	11.573	0	15 17 41.13	2.2285	S. 12° 51' 37.4"	8.492
1	13 32 2.03	2.2733	4 53 41.2	11.533	1	15 19 54.82	2.2279	13 0 4.4	8.409
2	13 34 18.39	2.2719	5 5 11.8	11.489	2	15 22 8.48	2.2273	13 8 26.5	8.326
3	13 36 34.67	2.2705	5 16 39.8	11.445	3	15 24 22.10	2.2267	13 16 43.6	8.243
4	13 38 50.86	2.2692	5 28 5.2	11.400	4	15 26 35.68	2.2260	13 24 55.6	8.158
5	13 41 6.97	2.2679	5 39 27.9	11.354	5	15 28 49.22	2.2254	13 33 2.5	8.073
6	13 43 23.01	2.2665	5 50 47.7	11.307	6	15 31 2.73	2.2248	13 41 4.4	7.986
7	13 45 38.97	2.2653	6 2 4.6	11.258	7	15 33 16.20	2.2243	13 49 1.1	7.902
8	13 47 54.85	2.2640	6 13 18.6	11.208	8	15 35 29.63	2.2235	13 56 52.6	7.815
9	13 50 10.66	2.2628	6 24 29.6	11.158	9	15 37 43.02	2.2228	14 4 38.9	7.728
10	13 52 26.39	2.2616	6 35 37.5	11.107	10	15 39 56.38	2.2223	14 12 20.0	7.641
11	13 54 42.05	2.2604	6 46 42.3	11.054	11	15 42 9.70	2.2217	14 19 55.9	7.554
12	13 56 57.64	2.2592	6 57 44.0	11.000	12	15 44 22.99	2.2211	14 27 26.5	7.466
13	13 59 13.16	2.2581	7 8 42.4	10.945	13	15 46 36.24	2.2205	14 34 51.8	7.377
14	14 1 28.61	2.2570	7 19 37.4	10.889	14	15 48 49.45	2.2199	14 42 11.7	7.286
15	14 3 44.00	2.2559	7 30 29.1	10.833	15	15 51 2.62	2.2193	14 49 26.3	7.198
16	14 5 59.32	2.2548	7 41 17.3	10.776	16	15 53 15.76	2.2186	14 56 35.6	7.109
17	14 8 14.58	2.2538	7 52 2.0	10.716	17	15 55 28.86	2.2180	15 3 39.5	7.019
18	14 10 29.77	2.2527	8 2 43.2	10.656	18	15 57 41.92	2.2174	15 10 37.9	6.929
19	14 12 44.90	2.2517	8 13 20.8	10.596	19	15 59 54.94	2.2168	15 17 30.9	6.836
20	14 14 59.97	2.2507	8 23 54.7	10.535	20	16 2 7.93	2.2161	15 24 18.4	6.741
21	14 17 14.98	2.2497	8 34 24.9	10.473	21	16 4 20.88	2.2155	15 31 0.4	6.646
22	14 19 29.93	2.2487	8 44 51.3	10.409	22	16 6 33.79	2.2148	15 37 37.0	6.553
23	14 21 44.82	2.2478	8 55 13.9	10.345	23	16 8 46.66	2.2142	15 44 8.0	6.457
24	14 23 59.66	2.2468	S. 9° 5' 32.7"	10.279	24	16 10 59.50	2.2135	S. 15° 50' 33.5"	6.376

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
MONDAY 21.					WEDNESDAY 23.				
0	16 10 59.50	2.2135	S.15° 50' 33.5"	6.378	0	17 56 18.45	2.1692	S.19° 6' 26.7"	1.751
1	16 13 12.30	2.2129	15 56 53.4	6.365	1	17 58 28.56	2.1679	19 8 8.9	1.664
2	16 15 25.05	2.2122	16 3 7.7	6.192	2	18 0 38.60	2.1666	19 9 45.2	1.567
3	16 17 37.76	2.2116	16 9 16.4	6.068	3	18 2 48.56	2.1653	19 11 15.7	1.461
4	16 19 50.44	2.2109	16 15 19.5	6.005	4	18 4 58.44	2.1640	19 12 40.5	1.364
5	16 22 3.08	2.2103	16 21 17.0	5.912	5	18 7 8.24	2.1626	19 13 59.4	1.268
6	16 24 15.67	2.2096	16 27 8.9	5.817	6	18 9 17.95	2.1612	19 15 12.6	1.172
7	16 26 28.22	2.2089	16 32 55.1	5.722	7	18 11 27.58	2.1598	19 16 20.0	1.076
8	16 28 40.74	2.2083	16 38 35.5	5.627	8	18 13 37.12	2.1584	19 17 21.7	0.979
9	16 30 53.21	2.2074	16 44 10.3	5.532	9	18 15 46.58	2.1569	19 18 17.6	0.883
10	16 33 5.63	2.2067	16 49 39.4	5.437	10	18 17 55.95	2.1554	19 19 7.7	0.787
11	16 35 18.01	2.2060	16 55 2.8	5.342	11	18 20 5.23	2.1539	19 19 52.1	0.692
12	16 37 30.35	2.2053	17 0 20.5	5.247	12	18 22 14.42	2.1524	19 20 30.8	0.597
13	16 39 42.64	2.2046	17 5 32.4	5.151	13	18 24 23.52	2.1509	19 21 3.7	0.502
14	16 41 54.89	2.2038	17 10 38.6	5.055	14	18 26 32.53	2.1494	19 21 31.0	0.407
15	16 44 7.09	2.2030	17 15 39.0	4.960	15	18 28 41.45	2.1478	19 21 52.6	0.312
16	16 46 19.25	2.2022	17 20 33.7	4.863	16	18 30 50.27	2.1463	19 22 8.5	0.217
17	16 48 31.36	2.2013	17 25 22.6	4.767	17	18 32 59.00	2.1447	19 22 18.7	0.123
18	16 50 43.41	2.2005	17 30 5.7	4.670	18	18 35 7.64	2.1431	19 22 23.3	0.029
19	16 52 55.42	2.1997	17 34 43.0	4.573	19	18 37 16.18	2.1415	19 22 22.2	0.008
20	16 55 7.38	2.1989	17 39 14.5	4.477	20	18 39 24.62	2.1399	19 22 15.5	0.160
21	16 57 19.29	2.1981	17 43 40.2	4.380	21	18 41 32.96	2.1383	19 22 3.2	0.262
22	16 59 31.15	2.1972	17 48 0.1	4.284	22	18 43 41.21	2.1367	19 21 45.2	0.346
23	17 1 42.96	2.1963	S.17° 52' 14.2"	4.187	23	18 45 49.36	2.1350	S.19° 21' 21.6"	0.429
TUESDAY 22.					THURSDAY 24.				
0	17 3 54.71	2.1954	S.17° 56' 22.5"	4.090	0	18 47 57.41	2.1333	S.19° 20' 52.5"	0.532
1	17 6 6.41	2.1946	18 0 24.9	3.992	1	18 50 5.36	2.1316	19 20 17.8	0.426
2	17 8 18.06	2.1937	18 4 21.5	3.895	2	18 52 13.20	2.1299	19 19 37.5	0.717
3	17 10 29.65	2.1927	18 8 12.3	3.798	3	18 54 20.94	2.1282	19 18 51.7	0.809
4	17 12 41.18	2.1918	18 11 57.2	3.701	4	18 56 28.58	2.1264	19 18 0.4	0.901
5	17 14 52.65	2.1908	18 15 36.3	3.603	5	18 58 36.11	2.1246	19 17 3.6	0.993
6	17 17 4.07	2.1898	18 19 9.5	3.506	6	19 0 43.53	2.1229	19 16 1.3	1.086
7	17 19 15.43	2.1888	18 22 36.9	3.408	7	19 2 50.85	2.1211	19 14 53.5	1.176
8	17 21 26.72	2.1878	18 25 58.4	3.310	8	19 4 58.06	2.1193	19 13 40.2	1.267
9	17 23 37.95	2.1868	18 29 14.0	3.212	9	19 7 5.17	2.1175	19 12 21.5	1.357
10	17 25 49.13	2.1858	18 32 23.8	3.115	10	19 9 12.16	2.1157	19 10 57.4	1.447
11	17 28 0.24	2.1847	18 35 27.7	3.017	11	19 11 19.04	2.1138	19 9 27.9	1.536
12	17 30 11.29	2.1836	18 38 25.8	2.920	12	19 13 25.81	2.1120	19 7 53.1	1.626
13	17 32 22.27	2.1824	18 41 18.0	2.822	13	19 15 32.47	2.1101	19 6 12.9	1.716
14	17 34 33.18	2.1813	18 44 4.4	2.725	14	19 17 39.02	2.1082	19 4 27.2	1.805
15	17 36 44.03	2.1802	18 46 44.9	2.627	15	19 19 45.46	2.1063	19 2 36.2	1.894
16	17 38 54.81	2.1791	18 49 19.6	2.530	16	19 21 51.78	2.1044	19 0 39.9	1.983
17	17 41 5.52	2.1779	18 51 48.4	2.432	17	19 23 57.99	2.1026	18 58 38.3	2.071
18	17 43 16.16	2.1767	18 54 11.4	2.335	18	19 26 4.09	2.1007	18 56 31.4	2.160
19	17 45 26.73	2.1756	18 56 28.5	2.237	19	19 28 10.07	2.0988	18 54 19.2	2.247
20	17 47 37.22	2.1743	18 58 39.8	2.140	20	19 30 15.94	2.0969	18 52 1.8	2.334
21	17 49 47.64	2.1731	19 0 45.3	2.043	21	19 32 21.69	2.0949	18 49 39.1	2.421
22	17 51 57.99	2.1718	19 2 44.9	1.946	22	19 34 27.33	2.0930	18 47 11.3	2.507
23	17 54 8.26	2.1706	19 4 38.7	1.848	23	19 36 32.85	2.0910	18 44 38.3	2.593
24	17 56 18.45	2.1692	S.19° 6' 26.7"	1.751	24	19 38 38.25	2.0891	S.18° 42' 0.1"	2.679

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
FRIDAY 25.					SUNDAY 27.				
0	19 38 38.25	2.0891	8.18 42 0.1	2.079	0	21 16 36.67	1.9944	8.15 1 38.2	6.943
1	19 40 43.54	2.0871	18 39 16.8	2.765	1	21 18 36.28	1.9926	14 55 15.6	6.409
2	19 42 48.70	2.0851	18 36 28.3	2.550	2	21 20 35.78	1.9907	14 48 49.1	6.374
3	19 44 53.74	2.0831	18 33 34.7	2.335	3	21 22 35.17	1.9889	14 42 18.7	6.338
4	19 46 58.67	2.0811	18 30 36.1	2.019	4	21 24 34.45	1.9871	14 35 44.5	6.303
5	19 49 3.48	2.0791	18 27 32.4	2.103	5	21 26 33.63	1.9854	14 29 6.4	6.267
6	19 51 8.17	2.0771	18 24 23.7	2.187	6	21 28 32.70	1.9837	14 22 24.5	6.730
7	19 53 12.74	2.0752	18 21 10.0	2.371	7	21 30 31.67	1.9820	14 15 38.8	6.793
8	19 55 17.19	2.0732	18 17 51.2	2.554	8	21 32 30.54	1.9803	14 8 49.3	6.855
9	19 57 21.52	2.0711	18 14 27.5	2.437	9	21 34 29.31	1.9785	14 1 56.1	6.917
10	19 59 25.72	2.0691	18 10 58.8	2.619	10	21 36 27.97	1.9769	13 54 59.3	6.978
11	20 1 29.81	2.0671	18 7 25.2	2.801	11	21 38 26.53	1.9753	13 47 58.8	7.039
12	20 3 33.77	2.0651	18 3 46.7	2.983	12	21 40 25.00	1.9736	13 40 54.6	7.099
13	20 5 37.61	2.0630	18 0 3.3	2.764	13	21 42 23.37	1.9720	13 33 46.8	7.160
14	20 7 41.33	2.0610	17 56 15.0	2.845	14	21 44 21.64	1.9704	13 26 35.5	7.219
15	20 9 44.93	2.0590	17 52 21.9	2.925	15	21 46 19.82	1.9688	13 19 20.6	7.278
16	20 11 48.41	2.0570	17 48 24.0	2.995	16	21 48 17.90	1.9673	13 12 2.2	7.336
17	20 13 51.77	2.0550	17 44 21.3	2.084	17	21 50 15.89	1.9657	13 4 40.3	7.394
18	20 15 55.01	2.0530	17 40 13.9	2.163	18	21 52 13.78	1.9641	12 57 14.9	7.451
19	20 17 58.13	2.0509	17 36 1.7	2.242	19	21 54 11.58	1.9625	12 49 46.1	7.508
20	20 20 1.12	2.0489	17 31 44.8	2.321	20	21 56 9.29	1.9611	12 42 14.0	7.564
21	20 22 4.00	2.0469	17 27 23.2	2.399	21	21 58 6.91	1.9597	12 34 38.5	7.620
22	20 24 6.75	2.0449	17 22 56.9	2.477	22	22 0 4.45	1.9583	12 26 59.6	7.675
23	20 26 9.38	2.0429	8.17 18 26.0	2.554	23	22 2 1.90	1.9568	8.12 19 17.4	7.730
SATURDAY 26.					MONDAY 28.				
0	20 28 11.89	2.0408	8.17 13 50.4	2.631	0	22 3 59.27	1.9554	8.12 11 32.0	7.784
1	20 30 14.28	2.0388	17 9 10.2	2.707	1	22 5 56.55	1.9540	12 3 43.3	7.838
2	20 32 16.55	2.0368	17 4 25.5	2.783	2	22 7 53.75	1.9526	11 55 51.4	7.891
3	20 34 18.70	2.0348	16 59 36.3	2.858	3	22 9 50.87	1.9513	11 47 56.3	7.944
4	20 36 20.73	2.0328	16 54 42.5	2.933	4	22 11 47.91	1.9500	11 39 58.1	7.996
5	20 38 22.64	2.0308	16 49 44.2	2.008	5	22 13 44.87	1.9487	11 31 56.8	8.048
6	20 40 24.43	2.0288	16 44 41.5	2.083	6	22 15 41.75	1.9474	11 23 52.4	8.099
7	20 42 26.10	2.0268	16 39 34.3	2.157	7	22 17 38.56	1.9462	11 15 44.9	8.160
8	20 44 27.65	2.0248	16 34 22.7	2.230	8	22 19 35.30	1.9450	11 7 34.4	8.200
9	20 46 29.08	2.0229	16 29 6.7	2.303	9	22 21 31.97	1.9438	10 59 20.9	8.248
10	20 48 30.40	2.0209	16 23 46.4	2.375	10	22 23 28.56	1.9426	10 51 4.5	8.296
11	20 50 31.60	2.0189	16 18 21.7	2.447	11	22 25 25.08	1.9415	10 42 45.1	8.347
12	20 52 32.67	2.0169	16 12 52.7	2.519	12	22 27 21.54	1.9404	10 34 22.9	8.398
13	20 54 33.63	2.0150	16 7 19.4	2.590	13	22 29 17.93	1.9393	10 25 57.8	8.443
14	20 56 34.47	2.0131	16 1 41.9	2.661	14	22 31 14.25	1.9383	10 17 29.8	8.488
15	20 58 35.20	2.0112	15 56 0.1	2.732	15	22 33 10.51	1.9373	10 8 59.1	8.535
16	21 0 35.82	2.0093	15 50 14.1	2.802	16	22 35 6.72	1.9363	10 0 25.6	8.581
17	21 2 36.32	2.0074	15 44 23.9	2.871	17	22 37 2.86	1.9353	9 51 49.4	8.626
18	21 4 36.71	2.0055	15 38 29.6	2.940	18	22 38 58.95	1.9343	9 43 10.5	8.670
19	21 6 36.99	2.0037	15 32 31.1	2.008	19	22 40 54.98	1.9333	9 34 29.0	8.714
20	21 8 37.15	2.0017	15 26 28.6	2.076	20	22 42 50.95	1.9324	9 25 44.8	8.758
21	21 10 37.19	1.9998	15 20 22.0	2.143	21	22 44 46.87	1.9315	9 16 58.0	8.801
22	21 12 37.13	1.9980	15 14 11.4	2.210	22	22 46 42.74	1.9307	9 8 8.7	8.843
23	21 14 36.95	1.9962	15 7 56.8	2.277	23	22 48 38.56	1.9299	8 59 16.8	8.885
24	21 16 36.67	1.9944	8.15 1 38.2	2.343	24	22 50 34.33	1.9291	8.50 22.5	8.926

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
TUESDAY 29.					WEDNESDAY 30.				
0	22 50 34.33	1.9291	S. 8° 50' 22.5	8.996	0	23 36 43.35	1.9196	S. 5° 5' 40.9	9.740
1	22 52 30.06	1.9284	8 41 25.7	8.987	1	23 38 38.54	1.9190	4 55 55.7	9.767
2	22 54 25.74	1.9277	8 32 26.5	9.007	2	23 40 33.73	1.9190	4 46 8.9	9.793
3	22 56 21.38	1.9270	8 23 24.9	9.047	3	23 42 28.99	1.9190	4 36 20.6	9.818
4	22 58 16.98	1.9263	8 14 20.9	9.086	4	23 44 24.12	1.9201	4 26 30.8	9.843
5	23 0 12.54	1.9257	8 5 14.6	9.124	5	23 46 19.33	1.9203	4 16 39.6	9.866
6	23 2 8.06	1.9251	7 56 6.0	9.162	6	23 48 14.55	1.9208	4 6 46.9	9.889
7	23 4 3.55	1.9246	7 46 55.1	9.199	7	23 50 9.79	1.9207	3 56 52.9	9.911
8	23 5 59.01	1.9240	7 37 42.1	9.236	8	23 52 5.04	1.9210	3 46 57.6	9.933
9	23 7 54.43	1.9234	7 28 26.9	9.272	9	23 54 0.31	1.9213	3 37 1.0	9.954
10	23 9 49.83	1.9229	7 19 9.5	9.308	10	23 55 55.60	1.9216	3 27 3.1	9.976
11	23 11 45.20	1.9226	7 9 50.0	9.343	11	23 57 50.91	1.9220	3 17 4.0	9.996
12	23 13 40.54	1.9222	7 0 28.4	9.377	12	23 59 46.24	1.9224	3 7 3.7	10.014
13	23 15 35.86	1.9218	6 51 4.8	9.410	13	0 1 41.60	1.9229	2 57 2.3	10.033
14	23 17 31.16	1.9215	6 41 39.2	9.443	14	0 3 36.99	1.9234	2 46 59.8	10.051
15	23 19 26.44	1.9213	6 32 11.6	9.476	15	0 5 32.41	1.9239	2 36 56.3	10.068
16	23 21 21.70	1.9209	6 22 42.1	9.508	16	0 7 27.86	1.9246	2 26 51.7	10.085
17	23 23 16.94	1.9206	6 13 10.7	9.539	17	0 9 23.35	1.9253	2 16 46.1	10.101
18	23 25 12.17	1.9204	6 3 37.4	9.570	18	0 11 18.88	1.9258	2 6 39.6	10.116
19	23 27 7.38	1.9201	5 54 2.3	9.600	19	0 13 14.44	1.9264	1 56 32.2	10.130
20	23 29 2.59	1.9200	5 44 25.4	9.629	20	0 15 10.05	1.9271	1 46 24.0	10.144
21	23 30 57.79	1.9199	5 34 46.8	9.658	21	0 17 5.70	1.9278	1 36 15.0	10.157
22	23 32 52.98	1.9198	5 25 6.5	9.686	22	0 19 1.39	1.9286	1 26 5.2	10.170
23	23 34 48.17	1.9198	5 15 24.5	9.713	23	0 20 57.13	1.9294	1 15 54.6	10.182
24	23 36 43.35	1.9198	S. 5° 5' 40.9	9.740	24	0 22 52.93	1.9304	S. 1° 5' 43.4	10.195

PHASES OF THE MOON.

○ Full Moon,	d h m	1 15 57.4
☾ Last Quarter,	9 10 4.3	
● New Moon,	16 1 19.4	
☽ First Quarter,	23 3 21.8	

☾ Perigee,	d h	14 20.3
☾ Apogee,	27 1.2	

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of DIF.	IIIh.	P. L. of DIF.	VIh.	P. L. of DIF.	IXh.	P. L. of DIF.
1	Saturn W.	92° 15' 50"	3073	93° 44' 34"	3000	95° 13' 21"	3006	96° 42' 12"	3002
	Antares W.	84 4 25	3110	85 32 22	3106	87 0 24	3103	88 28 30	3100
	α Aquilæ W.	42 47 2	4293	43 54 11	4214	45 2 24	4161	46 11 37	4092
	Jupiter E.	40 50 20	3023	39 20 34	3019	37 50 45	3016	36 20 52	3014
	α Arietis E.	64 20 1	3223	62 54 31	3236	61 29 4	3238	60 3 40	3240
	Aldebaran E.	95 50 45	3047	94 21 30	3043	92 52 11	3041	91 22 49	3037
2	Saturn W.	104 7 33	3044	105 36 51	3040	107 6 14	3036	108 35 42	3032
	Antares W.	95 50 3	3093	97 18 35	3078	98 47 12	3074	100 15 53	3070
	α Aquilæ W.	52 10 27	3063	53 24 24	3077	54 38 58	3792	55 54 8	3761
	α Arietis E.	52 57 35	3361	51 32 38	3367	50 7 48	3374	48 43 6	3282
	Aldebaran E.	83 54 50	3018	82 24 59	3014	80 55 4	3009	79 25 3	3005
	Mars E.	118 18 39	3206	116 53 48	3202	115 28 52	3207	114 3 50	3202
3	α Aquilæ W.	62 17 40	3028	63 35 44	3006	64 54 12	3006	66 13 2	3005
	α Arietis E.	41 42 27	3343	40 19 5	3361	38 56 4	3381	37 33 26	3405
	Aldebaran E.	71 53 33	2991	70 22 56	2976	68 52 12	2969	67 21 21	2965
	Mars E.	106 57 6	3226	105 31 26	3218	104 5 38	3212	102 39 43	3206
4	α Aquilæ W.	72 52 18	3480	74 13 4	3463	75 34 7	3452	76 55 25	3438
	Fomalhaut W.	39 9 35	3706	40 26 17	3660	41 43 57	3601	43 2 30	3557
	Aldebaran E.	59 45 19	2934	58 13 43	2928	56 42 0	2921	55 10 8	2914
	Mars E.	95 28 16	3173	94 1 34	3160	92 34 44	3168	91 7 45	3162
	Pollux E.	103 40 51	2909	102 10 37	2905	100 40 14	2905	99 9 42	2977
	Venus E.	109 47 41	3212	108 21 46	3206	106 55 43	3198	105 29 32	3193
5	α Aquilæ W.	83 45 30	3379	85 8 10	3370	86 31 1	3369	87 54 4	3361
	Fomalhaut W.	49 46 25	3377	51 9 8	3348	52 32 24	3320	53 56 12	3294
	α Pegasi W.	36 48 50	3072	38 2 38	3796	39 17 42	3730	40 33 57	3667
	Aldebaran E.	47 28 32	2877	45 55 44	2869	44 22 46	2861	42 49 37	2858
	Mars E.	83 50 36	3112	82 22 41	3105	80 54 37	3096	79 26 22	3087
	Pollux E.	91 34 38	2930	90 3 9	2931	88 31 29	2923	86 59 39	2916
	Venus E.	98 16 39	3167	96 49 38	3149	95 22 28	3141	93 55 8	3133
6	α Aquilæ W.	94 51 45	3311	96 15 44	3306	97 39 50	3299	99 4 3	3294
	Fomalhaut W.	61 2 22	3181	62 28 54	3161	63 55 50	3141	65 23 10	3123
	α Pegasi W.	47 10 14	3424	48 32 3	3396	49 54 35	3360	51 17 49	3316
	Jupiter W.	20 38 16	2797	22 12 48	2786	23 47 35	2773	25 22 38	2761
	Aldebaran E.	35 1 9	2809	33 26 53	2790	31 52 24	2780	30 17 42	2760
	Mars E.	72 2 21	3040	70 32 58	3030	69 3 23	3020	67 33 35	3010
	Pollux E.	79 17 53	2873	77 44 59	2864	76 11 54	2856	74 38 38	2846
	Venus E.	86 35 55	3089	85 7 32	3079	83 38 57	3069	82 10 10	3060
7	Fomalhaut W.	72 45 15	3037	74 14 42	3021	75 44 29	3005	77 14 36	2990
	α Pegasi W.	58 23 15	3170	59 50 0	3144	61 17 16	3120	62 45 1	3096
	Jupiter W.	33 21 50	2701	34 58 28	2690	36 35 21	2678	38 12 31	2666
	Mars E.	60 1 21	2966	58 30 13	2944	56 58 50	2933	55 27 13	2922
	Pollux E.	66 49 22	2801	65 14 56	2792	63 40 17	2782	62 5 26	2773
	Venus E.	74 43 8	3007	73 13 4	2998	71 42 46	2984	70 12 13	2973
	SUN E.	119 27 17	3070	117 58 31	3060	116 29 31	3046	115 0 15	3034
8	Fomalhaut W.	84 49 51	2916	86 21 49	2903	87 54 4	2889	89 26 37	2876
	α Pegasi W.	70 10 39	2990	71 41 4	2970	73 11 54	2962	74 43 7	2953
	Jupiter W.	46 22 30	2602	48 1 22	2589	49 40 32	2576	51 20 0	2563
	Mars E.	47 45 23	2961	46 12 14	2948	44 38 48	2935	43 5 6	2923

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Dist.	XVh.	P. L. of Dist.	XVIIIh.	P. L. of Dist.	XXIh.	P. L. of Dist.
1	Saturn W.	98° 11' 8"	3060	99° 40' 8"	3066	101° 9' 12"	3062	102° 38' 20"	3048
	Antares W.	89 56 40	3066	91 24 54	3062	92 53 13	3068	94 21 36	3066
	α Aquilæ W.	47 21 46	3060	48 32 47	3066	49 44 36	3046	50 57 10	3063
	Jupiter E.	34 50 56	3010	33 20 56	3008	31 50 53	3006	30 20 47	3002
	α Arietis E.	58 38 18	3243	57 13 0	3247	55 47 47	3252	54 22 39	3256
	Aldebaran E.	89 53 22	3034	88 23 51	3030	86 54 16	3026	85 24 36	3022
2	Saturn W.	110 5 15	3077	111 34 54	3023	113 4 38	3019	114 34 27	3014
	Antares W.	101 44 39	3066	103 13 30	3062	104 42 25	3060	106 11 25	3054
	α Aquilæ W.	57 9 51	3181	58 26 5	3103	59 42 49	3077	61 0 1	3061
	α Arietis E.	47 18 34	3232	45 54 13	3301	44 30 3	3213	43 6 7	3227
	Aldebaran E.	77 54 57	3001	76 24 45	3096	74 54 27	3091	73 24 3	3086
	Mars E.	112 38 42	3247	111 13 28	3241	109 48 7	3236	108 22 40	3230
3	α Aquilæ W.	67 32 14	3047	68 51 46	3029	70 11 38	3012	71 31 49	3006
	α Arietis E.	36 11 15	3433	34 49 35	3464	33 28 31	3501	32 8 8	3544
	Aldebaran E.	65 50 24	3066	64 19 19	3063	62 48 7	3046	61 16 47	3040
	Mars E.	101 13 41	3199	99 47 31	3196	96 21 14	3187	96 54 49	3180
4	α Aquilæ W.	78 16 58	3426	79 38 45	3418	81 0 47	3401	82 23 2	3390
	Fomalhaut W.	44 21 51	3015	45 41 58	3477	47 2 48	3441	48 24 18	3408
	Aldebaran E.	53 38 7	3007	52 5 57	3006	50 33 38	2993	49 1 10	2986
	Mars E.	89 40 38	3144	88 13 22	3136	86 45 56	3129	85 18 21	3120
	Pollux E.	97 39 0	2960	96 8 9	2962	94 37 8	2954	93 5 58	2946
	Venus E.	104 3 14	3186	102 36 48	3178	101 10 13	3172	99 43 30	3166
5	α Aquilæ W.	89 17 17	3343	90 40 40	3338	92 4 13	3326	93 27 55	3319
	Fomalhaut W.	55 20 30	3070	56 45 17	3245	58 10 33	3223	59 36 15	3202
	α Pegasi W.	41 51 19	3010	43 9 42	3060	44 29 0	3011	45 49 12	3066
	Aldebaran E.	41 16 18	3046	39 42 48	3036	38 9 6	3027	36 35 13	3018
	Mars E.	77 57 56	3078	76 29 19	3069	75 0 31	3060	73 31 32	3050
	Pollux E.	85 27 39	3006	83 55 28	3086	82 23 7	3090	80 50 35	3082
	Venus E.	92 27 38	3124	90 59 58	3116	89 32 8	3107	88 4 7	3098
6	α Aquilæ W.	100 28 22	3398	101 52 47	3388	103 17 16	3382	104 41 49	3378
	Fomalhaut W.	66 50 52	3103	68 18 56	3067	69 47 22	3070	71 16 8	3063
	α Pegasi W.	52 41 42	3263	54 6 13	3263	55 31 20	3224	56 57 1	3196
	Jupiter W.	26 57 57	3149	26 33 32	3138	30 9 22	3136	31 45 28	3113
	Aldebaran E.	28 42 48	3169	27 7 40	3160	25 32 19	3149	23 56 44	3139
	Mars E.	66 3 35	3000	64 33 22	3080	63 2 55	3078	61 32 15	3067
	Pollux E.	73 5 10	3037	71 31 30	3028	69 57 39	3019	68 23 36	3011
	Venus E.	80 41 11	3049	79 11 59	3040	77 42 35	3029	76 12 58	3018
7	Fomalhaut W.	78 45 2	3074	80 15 47	3060	81 46 50	3046	83 18 11	3031
	α Pegasi W.	64 13 15	3074	65 41 56	3062	67 11 4	3030	68 40 39	3010
	Jupiter W.	39 49 57	3064	41 27 39	3040	43 5 39	3028	44 43 56	3016
	Mars E.	53 55 22	2910	52 23 16	2908	50 50 54	2903	49 18 16	2878
	Pollux E.	60 30 23	3164	58 55 8	3156	57 19 41	3146	55 44 2	3137
	Venus E.	68 41 26	3061	67 10 24	3049	65 39 6	3036	64 7 33	3024
	SUN E.	113 30 44	3091	112 0 57	3086	110 30 54	3068	109 0 35	3061
8	Fomalhaut W.	90 59 27	2863	92 32 33	2860	94 5 56	2836	95 39 35	2826
	α Pegasi W.	76 14 44	2916	77 46 44	2908	79 19 6	2890	80 51 51	2883
	Jupiter W.	52 59 46	2849	54 39 51	2835	56 20 15	2822	58 0 58	2808
	Mars E.	41 31 8	2811	39 56 54	2798	38 22 23	2785	36 47 35	2772

GREENWICH MEAN TIME.

LUNAR DISTANCES

Day of the Month.	Star's Name and Position.	Noon.	P. L. of DM.	IIIh.	P. L. of DM.	VIh.	P. L. of DM.	IXh.	P. L. of DM.
8	Pollux E.	54° 8' 11"	2728	52° 32' 8"	2730	50° 55' 55"	2713	49° 19' 31"	2704
	Venus E.	62 35 44	2911	61 3 39	2909	59 31 17	2884	57 58 38	2871
	SUN E.	107 29 59	2908	105 59 6	2884	104 27 56	2840	102 56 28	2826
9	α Pegasi W.	82 24 57	2847	83 58 24	2881	85 32 12	2815	87 6 20	2799
	Jupiter W.	59 42 0	2484	61 23 22	2479	63 5 5	2465	64 47 8	2451
	α Arietis W.	38 49 52	2911	40 21 57	2970	41 54 54	2833	43 28 39	2799
	Mars E.	35 12 31	2769	33 37 11	2748	32 1 35	2736	30 25 43	2726
	Pollux E.	41 15 7	2674	39 37 52	2671	38 0 33	2669	36 23 12	2668
	Venus E.	50 11 0	2801	48 36 34	2787	47 1 49	2772	45 26 45	2768
	SUN E.	95 14 35	2883	93 41 16	2886	92 7 37	2823	90 33 38	2807
10	α Pegasi W.	95 1 51	2720	96 37 51	2717	98 14 8	2708	99 50 41	2698
	Jupiter W.	73 22 27	2878	75 6 34	2863	76 51 2	2848	78 35 51	2833
	α Arietis W.	51 27 54	2982	53 5 38	2986	54 43 58	2901	56 22 51	2879
	Aldebaran W.	17 23 39	2410	19 6 59	2386	20 50 41	2380	22 34 44	2368
	Venus E.	37 26 34	2684	35 49 33	2669	34 12 11	2654	32 34 29	2638
	SUN E.	82 38 41	2729	81° 2 40	2713	79 26 18	2698	77 49 35	2682
11	Jupiter W.	87 25 19	2261	89 12 16	2247	90 59 34	2223	92 47 13	2218
	α Arietis W.	64 44 55	2473	66 26 46	2453	68 9 5	2435	69 51 50	2417
	Aldebaran W.	31 20 17	2393	33 6 27	2379	34 52 58	2364	36 39 50	2350
	SUN E.	69 40 45	2804	68 1 56	2800	66 22 47	2874	64 43 17	2860
12	Jupiter W.	101 50 34	2182	103 40 13	2141	105 30 10	2128	107 20 26	2116
	α Arietis W.	78 31 36	2838	80 16 40	2824	82 2 5	2810	83 47 50	2798
	Aldebaran W.	45 39 15	2184	47 28 6	2172	49 17 16	2159	51 6 45	2147
	SUN E.	56 20 49	2490	54 39 22	2477	52 57 36	2466	51 15 33	2453
13	α Arietis W.	92 40 54	2245	94 28 15	2226	96 15 49	2229	98 3 34	2222
	Aldebaran W.	60 18 23	2606	62 9 29	2606	64 0 49	2678	65 52 22	2670
	Mars W.	19 23 56	2893	21 8 25	2840	22 53 26	2821	24 38 55	2804
	SUN E.	42 41 12	2880	40 57 36	2869	39 13 46	2881	37 29 44	2874
14	Aldebaran W.	75 12 56	2080	77 5 30	2064	78 58 11	2080	80 50 58	2028
	Mars W.	33 31 24	2249	35 18 38	2241	37 6 4	2238	38 53 39	2226
	Pollux W.	32 24 12	2360	34 11 25	2326	35 59 14	2306	37 47 33	2188
	SUN E.	28 47 15	2840	27 2 25	2845	25 17 31	2844	23 32 36	2846
18	SUN W.	27 0 55	2661	28 40 44	2676	30 20 13	2691	31 59 20	2698
	Saturn E.	38 18 39	2379	36 32 8	2397	34 46 4	2316	33 0 26	2334
	Antares E.	46 14 39	2689	44 30 7	2684	42 46 9	2409	41 2 47	2436
	α Aquilæ E.	94 18 1	2736	92 42 9	2761	91 6 37	2766	89 31 25	2763
19	SUN W.	40 9 5	2697	41 45 49	2716	43 22 8	2736	44 58 1	2754
	α Aquilæ E.	81 41 25	2684	80 8 46	2699	78 36 37	2633	77 4 59	2668
20	SUN W.	52 51 6	2692	54 24 27	2673	55 57 22	2691	57 29 52	2611
	α Aquilæ E.	69 35 17	2102	68 7 10	2184	66 39 42	2186	65 12 55	2304
	Fomalhaut E.	102 38 39	2812	101 4 28	2838	99 30 37	2844	97 57 6	2868
21	SUN W.	65 6 12	2608	66 36 15	2696	68 5 56	2644	69 35 14	2692
	α Aquilæ E.	58 9 56	2402	56 47 42	2448	55 26 20	2406	54 5 51	2446
	Fomalhaut E.	90 14 45	2644	88 43 22	2692	87 12 21	2690	85 41 43	2697
	α Pegasi E.	105 0 38	2601	103 30 27	2614	102 0 31	2627	100 30 52	2640

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Dist.	XVth.	P. L. of Dist.	XVIIIth.	P. L. of Dist.	XXIth.	P. L. of Dist.
8	Pollux E.	47° 42' 56"	3000	46° 6' 11"	3000	44° 29' 18"	3004	42° 52' 16"	3078
	Venus E.	56 25 48	3007	54 59 26	3044	53 18 57	3030	51 45 8	3015
	SUN E.	101 24 43	3019	99 52 38	3008	98 20 16	3003	96 47 35	3008
9	α Pegasi W.	88 40 49	3706	90 15 37	3771	91 50 43	3766	93 26 8	3743
	Jupiter W.	66 29 30	3436	68 12 13	3433	69 55 17	3408	71 38 41	3392
	α Arietis W.	45 3 8	3706	46 38 20	3790	48 14 13	3708	49 50 45	3678
	Mars E.	28 49 57	3715	27 13 17	3704	25 36 48	3696	23 59 57	3687
	Pollux E.	34 45 31	3073	33 8 33	3077	31 31 22	3069	29 54 22	3066
	Venus E.	43 51 23	3743	42 15 39	3729	40 39 37	3713	39 3 15	3699
	SUN E.	88 59 19	3723	87 24 40	3776	85 49 41	3760	84 14 21	3745
10	α Pegasi W.	101 27 28	3004	103 4 30	3074	104 41 45	3066	106 19 12	3057
	Jupiter W.	80 21 2	3519	82 6 34	3504	83 52 28	3489	85 38 43	3474
	α Arietis W.	58 2 15	3686	59 42 10	3684	61 22 36	3613	63 3 31	3493
	Aldebaran W.	24 19 8	3361	26 8 53	3336	27 49 0	3323	29 34 26	3307
	Venus E.	30 56 27	3004	29 18 5	3010	27 39 23	3005	26 0 21	2990
	SUN E.	76 12 31	3005	74 35 6	3061	72 57 20	3036	71 19 13	3030
11	Jupiter W.	94 35 13	3208	96 23 33	3191	98 12 14	3178	100 1 14	3166
	α Arietis W.	71 35 0	3401	73 18 34	3384	75 2 32	3368	76 46 53	3363
	Aldebaran W.	38 27 3	3397	40 14 36	3393	42 2 30	3310	43 50 43	3197
	SUN E.	63 3 27	3040	61 23 17	3031	59 42 47	3017	58 1 58	2993
12	Jupiter W.	109 11 0	3106	111 1 51	3094	112 52 59	3084	114 44 23	3078
	α Arietis W.	85 33 53	3386	87 20 14	3374	89 6 53	3363	90 53 46	3363
	Aldebaran W.	52 56 32	3106	54 46 36	3196	56 36 56	3116	58 27 32	3106
	SUN E.	49 33 13	3441	47 50 36	3409	46 7 43	3419	44 24 35	3406
13	α Arietis W.	99 51 29	3036	101 39 33	3212	103 27 43	3208	105 15 59	3204
	Aldebaran W.	67 44 8	3023	69 36 5	3086	71 28 13	3069	73 20 30	3044
	Mars W.	26 24 48	3200	26 11 9	3279	29 57 34	3267	31 44 22	3266
	SUN E.	35 45 32	3067	34 1 10	3061	32 16 39	3056	30 32 0	3061
14	Aldebaran W.	82 43 49	3036	84 36 44	3080	86 29 42	3023	88 22 41	3023
	Mars W.	40 41 22	3236	42 29 11	3232	44 17 6	3220	46 5 4	3218
	Pollux W.	39 36 18	3174	41 25 25	3161	43 14 51	3161	45 4 33	3143
	SUN E.	21 47 43	3247	20 2 51	3261	18 18 6	3266	16 33 31	3267
15	SUN W.	33 38 4	3026	35 16 25	3043	36 54 23	3000	38 31 56	3070
	Saturn E.	31 15 16	3044	29 30 35	3075	27 46 24	3007	26 2 45	3019
	Antares E.	39 20 3	3465	37 38 0	3486	35 56 40	3029	34 16 6	3064
	α Aquila E.	87 56 35	3001	86 22 9	3031	84 48 8	3041	83 14 33	3002
19	SUN W.	46 33 29	3774	48 8 31	3798	49 43 8	3813	51 17 20	3833
	α Aquila E.	75 33 53	3036	74 3 21	3013	72 33 24	3041	71 4 2	3071
20	SUN W.	59 1 57	3001	60 33 37	3030	62 4 58	3009	63 35 45	3000
	α Aquila E.	68 46 50	3240	69 21 28	3270	60 56 51	3216	59 33 0	3366
	Fomalhaut E.	96 23 55	3076	94 51 5	3080	93 18 37	3000	91 46 30	3027
21	SUN W.	71 4 10	3000	72 32 44	3000	74 0 56	3115	75 28 47	3123
	α Aquila E.	52 46 18	3003	51 27 42	3044	50 10 7	3714	48 53 35	3778
	Fomalhaut E.	84 11 27	3016	82 41 34	3034	81 12 3	3063	79 42 56	3071
	α Pegasi E.	99 1 29	3004	97 32 23	3009	96 3 35	3062	94 35 4	3096

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Dist.	IIIh.	P. L. of Dist.	VIh.	P. L. of Dist.	IXh.	P. L. of Dist.
22	SUN W.	76° 56' 17"	3149	78° 23' 27"	3165	79° 50' 18"	3182	81° 16' 49"	3197
	α Aquilæ E.	47 38 10	3046	46 23 55	3017	45 10 52	3005	43 59 7	4079
	Fomalhaut E.	78 14 11	3080	76 45 49	3100	75 17 50	3128	73 50 14	3148
	α Pegasi E.	93 6 50	3111	91 38 54	3125	90 11 15	3140	88 43 54	3154
	Jupiter E.	113 54 20	2763	112 18 49	2766	110 43 37	2781	109 8 44	2786
23	SUN W.	88 24 58	3200	89 49 46	3203	91 14 18	3205	92 38 35	3206
	Saturn W.	28 3 11	2965	29 34 8	2973	31 4 55	2982	32 35 30	2992
	Antares W.	22 58 19	3318	24 22 12	3284	25 46 42	3266	27 11 43	3236
	Fomalhaut E.	66 38 5	3247	65 12 51	3266	63 48 0	3287	62 23 33	3309
	α Pegasi E.	81 31 34	3230	80 6 0	3244	78 40 43	3250	77 15 44	3274
	Jupiter E.	101 18 45	2960	99 45 35	2971	98 12 39	2983	96 39 58	2994
24	SUN W.	99 36 43	3361	100 59 44	3370	102 22 35	3379	103 45 15	3387
	Saturn W.	40 5 40	3033	41 35 12	3041	43 4 34	3048	44 33 47	3055
	Antares W.	34 21 42	3178	35 48 17	3174	37 14 57	3170	38 41 42	3168
	Fomalhaut E.	55 27 45	3434	54 5 56	3450	52 44 36	3477	51 23 46	3504
	α Pegasi E.	70 15 16	3392	68 52 5	3398	67 29 12	3384	66 6 37	3400
	Jupiter E.	88 59 52	2943	87 28 27	2960	85 57 12	2968	84 26 7	2986
25	SUN W.	110 36 23	3433	111 58 13	3438	113 19 58	3433	114 41 37	3436
	Saturn W.	51 57 58	3063	53 26 28	3067	54 54 53	3062	56 23 12	3066
	Antares W.	45 56 5	3180	47 23 2	3160	48 50 0	3160	50 16 58	3166
	Fomalhaut E.	44 47 50	3670	43 30 31	3710	42 13 55	3744	40 58 5	3802
	α Pegasi E.	59 18 33	3490	57 57 58	3510	56 37 45	3530	55 17 54	3562
	Jupiter E.	76 52 51	2997	75 22 34	3001	73 52 23	3006	72 22 18	3009
26	Saturn W.	63 43 51	3109	65 11 50	3110	66 39 48	3111	68 7 44	3111
	Antares W.	57 32 1	3154	58 59 5	3154	60 26 9	3163	61 53 15	3162
	α Pegasi E.	48 45 2	3680	47 27 54	3712	46 11 20	3746	44 55 21	3782
	Jupiter E.	64 52 55	3024	63 23 12	3025	61 53 30	3026	60 23 50	3028
	α Arietis E.	90 21 8	3216	88 55 18	3219	87 29 31	3220	86 3 46	3221
27	Saturn W.	75 27 24	3110	76 55 22	3108	78 23 22	3106	79 51 24	3104
	Antares W.	69 9 15	3141	70 36 35	3138	72 3 59	3136	73 31 26	3133
	Jupiter E.	52 55 39	3028	51 25 59	3025	49 56 17	3023	48 26 33	3022
	α Arietis E.	78 53 17	3225	77 29 38	3225	76 3 59	3225	74 38 20	3226
	Aldebaran E.	110 59 24	3071	109 30 39	3070	108 1 53	3068	106 33 4	3066
28	Saturn W.	87 12 20	3089	88 40 43	3086	90 9 10	3082	91 37 42	3077
	Antares W.	80 49 40	3114	82 17 33	3110	83 45 30	3106	85 13 33	3101
	α Aquilæ W.	40 24 31	4406	41 28 53	4361	42 34 31	4303	43 41 21	4231
	Jupiter E.	40 57 16	3009	39 27 14	3006	37 57 7	3001	36 26 56	2998
	α Arietis E.	67 30 9	3226	66 4 31	3227	64 38 54	3228	63 13 18	3226
	Aldebaran E.	99 8 15	3063	97 39 6	3047	96 9 52	3043	94 40 33	3039
29	Saturn W.	99 1 47	3052	100 30 55	3047	102 0 9	3043	103 29 30	3038
	Antares W.	92 35 17	3076	94 3 56	3070	95 32 42	3066	97 1 35	3060
	α Aquilæ W.	49 30 50	3947	50 43 22	3903	51 56 39	3860	53 10 39	3823
	α Arietis E.	56 5 30	3236	54 40 2	3236	53 14 38	3243	51 49 18	3246
	Aldebaran E.	87 12 32	3014	85 42 37	3009	84 12 35	3003	82 42 26	2997
30	α Aquilæ W.	59 29 56	3980	60 47 26	3933	62 5 26	3907	63 23 53	3863
	α Arietis E.	44 44 9	3381	43 19 35	3392	41 55 14	3396	40 31 9	3322
	Aldebaran E.	75 9 45	2968	73 38 48	2956	72 7 43	2951	70 36 29	2946

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Dist.	XVh.	P. L. of Dist.	XVIIIh.	P. L. of Dist.	XXh.	P. L. of Dist.
22	SUN W.	82° 43' 2"	3213	84° 8' 57"	3227	85° 34' 34"	3243	86° 59' 54"	3255
	α Aquilæ E.	42 48 45	4169	41 39 50	4266	40 32 26	4373	39 26 40	4490
	Fomalhaut E.	72 23 2	3167	70 56 13	3186	69 29 46	3206	68 3 43	3226
	α Pegasi E.	87 16 50	3169	85 50 4	3184	84 23 36	3199	82 57 26	3214
	Jupiter E.	107 34 10	2809	105 59 54	2821	104 25 54	2836	102 52 11	2848
23	SUN W.	94 2 39	3219	95 26 29	3230	96 50 6	3240	98 13 31	3251
	Saturn W.	34 5 53	3001	35 36 5	3009	37 6 7	3017	38 35 59	3026
	Antares W.	28 37 9	3219	30 2 56	3205	31 28 59	3194	32 55 15	3185
	Fomalhaut E.	60 59 32	3231	59 35 56	3253	58 12 46	3276	56 50 2	3400
	α Pegasi E.	75 51 2	3229	74 26 38	3206	73 2 33	3220	71 38 45	3237
	Jupiter E.	95 7 31	2904	93 35 17	2915	92 3 17	2924	90 31 29	2932
24	SUN W.	105 7 46	3226	106 30 8	3403	107 52 21	3410	109 14 26	3417
	Saturn W.	46 2 52	3081	47 31 49	3067	49 0 39	3073	50 29 22	3078
	Antares W.	40 8 30	3163	41 35 21	3163	43 2 14	3193	44 29 9	3161
	Fomalhaut E.	50 3 26	3234	48 43 39	3255	47 24 26	3298	46 5 49	3233
	α Pegasi E.	64 44 21	3417	63 22 24	3435	62 0 47	3458	60 39 30	3471
	Jupiter E.	82 55 11	2973	81 24 24	2960	79 53 46	2966	78 23 15	2991
25	SUN W.	116 3 10	3443	117 24 38	3446	118 46 2	3450	120 7 22	3453
	Saturn W.	57 51 27	3099	59 19 38	3103	60 47 45	3106	62 15 49	3106
	Antares W.	51 43 57	3168	53 10 57	3168	54 37 57	3197	56 4 58	3166
	Fomalhaut E.	39 43 5	3255	38 28 59	3212	37 15 51	3274	36 3 46	4043
	α Pegasi E.	53 58 27	3275	52 39 25	3298	51 20 49	3294	50 2 41	3261
	Jupiter E.	70 52 17	3014	69 22 21	3017	67 52 29	3019	66 22 40	3022
26	Saturn W.	69 35 40	3113	71 3 35	3111	72 31 31	3111	73 59 27	3110
	Antares W.	63 20 22	3150	64 47 31	3148	66 14 43	3148	67 41 58	3143
	α Pegasi E.	43 40 0	3221	42 25 20	3206	41 11 26	3214	39 58 20	3266
	Jupiter E.	58 54 12	3028	57 24 34	3028	55 54 56	3028	54 25 18	3027
	α Arietis E.	84 38 2	3223	83 12 19	3224	81 46 38	3224	80 20 57	3225
27	Saturn W.	81 19 29	3101	82 47 37	3100	84 15 47	3098	85 44 1	3092
	Antares W.	74 58 56	3129	76 26 30	3126	77 54 9	3123	79 21 52	3118
	Jupiter E.	46 56 48	3020	45 27 0	3018	43 57 9	3014	42 27 14	3012
	α Arietis E.	73 12 42	3226	71 47 4	3226	70 21 25	3226	68 55 47	3226
	Aldebaran E.	105 4 13	3064	103 35 19	3060	102 6 21	3066	100 37 20	3065
28	Saturn W.	93 6 20	3073	94 35 3	3068	96 3 52	3064	97 32 46	3066
	Antares W.	86 41 42	3086	88 9 57	3091	89 38 17	3098	91 6 44	3081
	α Aquilæ W.	44 49 18	4165	45 58 17	4105	47 8 14	4048	48 19 6	3996
	Jupiter E.	34 56 41	2994	33 26 21	2989	31 55 55	2988	30 25 24	2982
	α Arietis E.	61 47 42	3229	60 22 7	3220	58 56 33	3231	57 31 1	3222
	Aldebaran E.	93 11 8	3034	91 41 38	3080	90 12 2	3025	88 42 20	3020
29	Saturn W.	104 58 59	3030	106 28 35	3024	107 58 18	3018	109 28 9	3011
	Antares W.	98 30 34	3044	99 59 40	3047	101 28 54	3042	102 58 15	3037
	α Aquilæ W.	54 25 18	3786	55 40 35	3750	56 56 29	3718	58 12 57	3689
	α Arietis E.	50 24 2	3260	48 58 52	3266	47 33 49	3263	46 8 54	3271
	Aldebaran E.	81 12 9	2991	79 41 45	2965	78 11 13	2978	76 40 33	2973
30	α Aquilæ W.	64 42 46	3660	66 2 4	3638	67 21 46	3517	68 41 51	3497
	α Arietis E.	39 7 23	3240	37 43 58	3262	36 20 58	3266	34 58 26	3415
	Aldebaran E.	69 5 7	2988	67 33 36	2990	66 1 55	2923	64 30 5	2915

AT GREENWICH APPARENT NOON.

AT GREENWICH APPARENT NOON.											
Day of the Week.	Day of the Month.	THE SUN'S						Sideral Time of the Semi-diameter passing the Meridian.	Equation of Time, to be subtracted from Apparent Time.	Diff. for 1 hour.	
		Apparent Right Ascension.		Diff. for 1 hour.	Apparent Declination.		Diff. for 1 hour.				Semi-diameter.
		^h ^m ^s	^s		[°] ['] ["]	["]					
Thur.	1	12	31 28.13	9.063	8. 3 23 55.3	58.23	16 1.71	64.38	10 28.98	0.793	
Fri.	2	12	35 5.75	9.076	3 47 11.2	58.13	16 1.99	64.43	10 47.86	0.780	
Sat.	3	12	38 43.70	9.090	4 10 24.4	58.01	16 2.26	64.46	11 6.41	0.766	
Sun.	4	12	42 21.99	9.106	4 38 34.9	57.88	16 2.53	64.53	11 24.63	0.751	
Mon.	5	12	46 0.65	9.121	4 56 41.9	57.73	16 2.80	64.59	11 42.47	0.735	
Tues.	6	12	49 39.71	9.138	5 19 45.3	57.57	16 3.07	64.65	11 59.91	0.718	
Wed.	7	12	53 19.19	9.156	5 42 44.7	57.40	16 3.35	64.71	12 16.93	0.700	
Thur.	8	12	56 59.11	9.175	6 5 39.9	57.21	16 3.62	64.77	12 33.52	0.681	
Fri.	9	13	0 39.48	9.194	6 28 30.4	57.01	16 3.88	64.84	12 49.67	0.662	
Sat.	10	13	4 20.34	9.214	6 51 15.8	56.79	16 4.16	64.91	13 5.30	0.642	
Sun.	11	13	8 1.70	9.235	7 13 55.8	56.55	16 4.44	64.98	13 20.46	0.621	
Mon.	12	13	11 43.56	9.257	7 36 30.0	56.30	16 4.71	65.05	13 35.11	0.599	
Tues.	13	13	15 25.95	9.279	7 58 57.9	56.03	16 4.99	65.13	13 49.24	0.576	
Wed.	14	13	19 8.89	9.302	8 21 19.3	55.75	16 5.26	65.21	14 2.81	0.553	
Thur.	15	13	22 52.39	9.326	8 43 33.7	55.45	16 5.53	65.29	14 15.82	0.530	
Fri.	16	13	26 36.46	9.350	9 5 40.8	55.14	16 5.80	65.38	14 28.27	0.506	
Sat.	17	13	30 21.13	9.375	9 27 40.1	54.81	16 6.07	65.47	14 40.12	0.481	
Sun.	18	13	34 6.40	9.400	9 49 31.0	54.46	16 6.34	65.56	14 51.37	0.456	
Mon.	19	13	37 52.29	9.426	10 11 13.3	54.10	16 6.62	65.65	15 2.01	0.430	
Tues.	20	13	41 38.80	9.452	10 32 46.8	53.71	16 6.89	65.74	15 12.03	0.404	
Wed.	21	13	45 25.94	9.479	10 54 10.9	53.30	16 7.16	65.84	15 21.41	0.377	
Thur.	22	13	49 13.74	9.507	11 15 24.9	52.88	16 7.43	65.94	15 30.14	0.349	
Fri.	23	13	53 2.21	9.535	11 36 28.7	52.44	16 7.71	66.04	15 38.20	0.321	
Sat.	24	13	56 51.37	9.564	11 57 21.9	51.99	16 7.98	66.14	15 45.58	0.292	
Sun.	25	14	0 41.23	9.593	12 18 4.2	51.52	16 8.25	66.25	15 52.26	0.263	
Mon.	26	14	4 31.79	9.623	12 38 35.0	51.03	16 8.52	66.35	15 58.23	0.233	
Tues.	27	14	8 23.08	9.653	12 58 54.0	50.53	16 8.78	66.46	16 3.48	0.202	
Wed.	28	14	12 15.10	9.684	13 19 0.6	50.01	16 9.04	66.57	16 8.00	0.171	
Thur.	29	14	16 7.87	9.716	13 38 54.5	49.47	16 9.30	66.68	16 11.77	0.140	
Fri.	30	14	20 1.42	9.748	13 58 35.5	48.92	16 9.55	66.79	16 14.77	0.108	
Sat.	31	14	23 55.75	9.781	14 18 3.1	48.36	16 9.80	66.90	16 16.99	0.075	
Sun.	32	14	27 50.89	9.814	14 37 16.9	47.77	16 10.05	67.01	16 18.40	0.042	

NOTE. — Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sideral Time.

NOTE. — Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sideral Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be added to Mean Time.	Diff. for 1 hour.	Sidereal Time.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.			
Thur.	1	12 ^h 31 ^m 29.71 ^s	9.063	S. 3° 24' 5.4"	58.23	10 29.12	0.793	12 41 58.83
Fri.	2	12 35 7.38	9.076	3 47 21.5	58.13	10 48.00	0.780	12 45 55.38
Sat.	3	12 38 45.38	9.090	4 10 35.1	58.01	11 6.55	0.766	12 49 51.93
Sun.	4	12 42 23.72	9.105	4 33 45.9	57.88	11 24.77	0.751	12 53 48.49
Mon.	5	12 46 2.43	9.121	4 56 53.2	57.73	11 42.61	0.735	12 57 45.04
Tues.	6	12 49 41.54	9.138	5 19 56.8	57.57	12 0.05	0.718	13 1 41.59
Wed.	7	12 53 21.07	9.156	5 42 56.5	57.40	12 17.07	0.700	13 5 38.14
Thur.	8	12 57 1.03	9.175	6 5 51.9	57.21	12 33.66	0.681	13 9 34.69
Fri.	9	13 0 41.45	9.194	6 28 42.6	57.01	12 49.80	0.662	13 13 31.25
Sat.	10	13 4 22.36	9.214	6 51 28.2	56.79	13 5.44	0.642	13 17 27.80
Sun.	11	13 8 3.76	9.235	7 14 8.3	56.55	13 20.59	0.621	13 21 24.35
Mon.	12	13 11 45.66	9.257	7 36 42.7	56.30	13 35.25	0.599	13 25 20.91
Tues.	13	13 15 28.09	9.279	7 59 10.8	56.03	13 49.37	0.576	13 29 17.46
Wed.	14	13 19 11.07	9.302	8 21 32.3	55.75	14 2.94	0.553	13 33 14.01
Thur.	15	13 22 54.61	9.326	8 43 46.8	55.45	14 15.95	0.530	13 37 10.56
Fri.	16	13 26 38.72	9.350	9 5 54.1	55.14	14 28.40	0.506	13 41 7.12
Sat.	17	13 30 23.42	9.375	9 27 53.5	54.81	14 40.25	0.481	13 45 3.67
Sun.	18	13 34 8.73	9.400	9 49 44.5	54.46	14 51.49	0.456	13 49 0.22
Mon.	19	13 37 54.65	9.426	10 11 26.9	54.10	15 2.12	0.430	13 52 56.77
Tues.	20	13 41 41.19	9.452	10 33 0.4	53.71	15 12.14	0.404	13 56 53.33
Wed.	21	13 45 28.37	9.479	10 54 24.5	53.30	15 21.51	0.377	14 0 49.88
Thur.	22	13 49 16.20	9.507	11 15 38.6	52.88	15 30.23	0.349	14 4 46.43
Fri.	23	13 53 4.70	9.535	11 36 42.4	52.44	15 38.28	0.321	14 8 42.98
Sat.	24	13 56 53.89	9.564	11 57 35.6	51.99	15 45.65	0.292	14 12 39.54
Sun.	25	14 0 43.77	9.593	12 18 17.8	51.52	15 52.32	0.263	14 16 36.09
Mon.	26	14 4 34.85	9.623	12 38 48.6	51.03	15 58.30	0.233	14 20 32.65
Tues.	27	14 8 25.66	9.653	12 59 7.5	50.53	16 3.54	0.202	14 24 29.20
Wed.	28	14 12 17.70	9.684	13 19 14.0	50.01	16 8.05	0.171	14 28 25.75
Thur.	29	14 16 10.50	9.716	13 39 7.8	49.47	16 11.81	0.140	14 32 22.31
Fri.	30	14 20 4.06	9.748	13 58 48.8	48.92	16 14.80	0.108	14 36 18.86
Sat.	31	14 23 58.41	9.781	14 18 16.8	48.36	16 17.01	0.075	14 40 15.42
Sun.	32	14 27 53.56	9.814	S. 14 37 29.9	47.77	16 18.41	0.042	14 44 11.97

NOTE. — The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

AT GREENWICH MEAN NOON.

AT GREENWICH MEAN NOON.									
Day of the Month.	Day of the Year.	THE SUN'S					Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal Oh.
		True LONGITUDE.		Diff. for 1 hour.	LATITUDE.				
		λ	λ'						
1	275	188° 34' 42.4	34' 15.5	147.67	—0.19	0.0001314	52.2	11 16 10.09	
2	276	189 33 47.6	33 20.6	147.75	0.28	0.0000063	52.0	11 12 14.19	
3	277	190 32 54.8	32 27.7	147.84	0.34	9.9998818	51.8	11 8 18.29	
4	278	191 32 4.2	31 37.0	147.93	0.36	.9997579	51.6	11 4 22.38	
5	279	192 31 15.9	30 48.6	148.03	0.36	.9996344	51.4	11 0 26.47	
6	280	193 30 29.8	30 2.5	148.12	0.33	.9995114	51.2	10 56 30.57	
7	281	194 29 45.9	29 18.6	148.22	0.26	.9993887	51.1	10 52 34.66	
8	282	195 29 4.3	28 36.9	148.31	0.17	.9992663	50.9	10 48 38.76	
9	283	196 28 25.1	27 57.6	148.41	—0.06	.9991442	50.8	10 44 42.85	
10	284	197 27 48.2	27 20.6	148.50	+0.06	.9990223	50.8	10 40 46.94	
11	285	198 27 13.6	26 45.9	148.60	0.19	.9989004	50.8	10 36 51.03	
12	286	199 26 41.4	26 13.6	148.69	0.32	.9987783	50.8	10 32 55.12	
13	287	200 26 11.5	25 43.6	148.79	0.43	.9986561	50.9	10 28 59.21	
14	288	201 25 43.8	25 15.8	148.88	0.54	.9985338	50.9	10 25 3.32	
15	289	202 25 18.2	24 50.1	148.97	0.63	.9984114	51.0	10 21 7.42	
16	290	203 24 54.6	24 26.4	149.06	0.71	.9982888	51.1	10 17 11.52	
17	291	204 24 33.1	24 4.8	149.14	0.76	.9981660	51.2	10 13 15.61	
18	292	205 24 13.6	23 45.2	149.22	0.78	.9980430	51.2	10 9 19.69	
19	293	306 23 55.9	23 27.4	149.30	0.76	.9979200	51.2	10 5 23.78	
20	294	307 23 40.0	23 11.4	149.38	0.70	.9977972	51.1	10 1 27.88	
21	295	308 23 25.9	22 57.2	149.45	0.62	.9976747	51.0	9 57 31.97	
22	296	309 23 13.5	22 44.7	149.52	0.53	.9975524	50.8	9 53 36.06	
23	297	310 23 2.8	22 33.9	149.59	0.41	.9974305	50.6	9 49 40.15	
24	298	311 22 53.8	22 24.8	149.66	0.28	.9973093	50.2	9 45 44.25	
25	299	312 22 46.5	22 17.4	149.73	0.15	.9971892	49.8	9 41 48.34	
26	300	313 22 40.9	22 11.6	149.79	+0.02	.9970701	49.4	9 37 52.43	
27	301	314 22 36.9	22 7.5	149.86	—0.11	.9969520	48.9	9 33 56.52	
28	302	315 22 34.6	22 5.1	149.93	0.22	.9968351	48.4	9 30 0.61	
29	303	316 22 34.1	22 4.5	150.01	0.31	.9967196	47.8	9 26 4.71	
30	304	317 22 35.4	22 5.7	150.08	0.37	.9966057	47.1	9 22 8.79	
31	305	318 22 38.5	22 8.6	150.16	0.40	.9964934	46.4	9 18 12.88	
32	306	319 22 43.4	22 13.4	150.24	—0.40	9.9963827	45.7	9 14 16.98	

NOTE: λ corresponds to the true equinox of the date, λ' to the mean equinox of January 0d.

NOTE: λ corresponds to the true equinox of the date, λ' to the mean equinox of January 0d.

GREENWICH MEAN TIME.

THE MOON'S

THE MOON'S										
Day of the Month.	SEMI- DIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.	
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.	<div>h m</div>	Diff. for 1 hour.		
1	15' 0.1	15' 3.2	54' 56.7	+0.92	55' 8.2	+0.99	12 2.2	1.82	14.9	
2	15 6.6	15 10.1	55 20.4	1.05	55 33.3	1.10	12 46.8	1.88	15.9	
3	15 13.7	15 17.5	55 46.7	1.14	56 0.6	1.18	13 32.8	1.96	16.9	
4	15 21.4	15 25.4	56 14.9	1.21	56 29.7	1.25	14 20.7	2.05	17.9	
5	15 29.5	15 33.8	56 44.9	1.28	57 0.4	1.30	15 11.0	2.15	18.9	
6	15 38.1	15 42.5	57 16.4	1.33	57 32.3	1.35	16 3.8	2.24	19.9	
7	15 46.9	15 51.4	57 48.7	1.37	58 5.2	1.38	16 58.9	2.33	20.9	
8	15 55.9	16 0.4	58 21.8	1.37	58 38.2	1.35	17 55.5	2.38	21.9	
9	16 4.8	16 9.0	58 54.3	1.31	59 9.7	1.25	18 52.8	2.38	22.9	
10	16 12.9	16 16.6	59 24.2	1.16	59 37.5	1.04	19 49.9	2.36	23.9	
11	16 19.7	16 22.4	59 49.1	0.89	59 58.8	0.71	20 46.1	2.31	24.9	
12	16 24.3	16 25.6	60 6.1	+0.50	60 10.7	+0.25	21 41.0	2.26	25.9	
13	16 26.0	16 25.5	60 12.1	-0.01	60 10.4	-0.29	22 34.7	2.22	26.9	
14	16 24.1	16 21.8	60 5.2	0.58	59 56.6	0.86	23 27.7	2.20	27.9	
15	16 18.5	16 14.4	59 44.6	1.13	59 29.4	1.37	6		28.9	
16	16 9.5	16 4.0	59 11.6	1.58	58 51.6	1.76	0 20.2	2.19	0.5	
17	15 58.0	15 51.6	58 29.4	1.90	58 5.9	2.00	1 12.5	2.18	1.5	
18	15 44.9	15 38.2	57 41.4	2.05	57 16.6	2.06	2 4.8	2.17	2.5	
19	15 31.5	15 25.0	56 52.0	2.02	56 28.1	1.95	2 56.9	2.16	3.5	
20	15 18.8	15 13.0	56 5.2	1.84	55 43.9	1.70	3 48.5	2.13	4.5	
21	15 7.6	15 2.8	55 24.3	1.54	55 6.8	1.36	4 39.1	2.08	5.5	
22	14 58.7	14 55.2	54 51.6	1.17	54 38.8	0.96	5 28.4	2.02	6.5	
23	14 52.4	14 50.3	54 28.5	0.75	54 20.8	0.53	6 16.0	1.95	7.5	
24	14 48.9	14 48.3	54 15.7	-0.32	54 13.2	-0.11	7 2.1	1.89	8.5	
25	14 48.2	14 48.9	54 13.1	+0.10	54 15.5	+0.29	7 46.9	1.84	9.5	
26	14 50.2	14 52.0	54 20.2	0.48	54 27.0	0.65	8 30.7	1.82	10.5	
27	14 54.4	14 57.3	54 35.8	0.81	54 46.4	0.94	9 14.0	1.81	11.5	
28	15 0.6	15 4.2	54 58.5	1.06	55 11.9	1.16	9 57.6	1.83	12.5	
29	15 8.2	15 12.4	55 26.4	1.24	55 41.7	1.30	10 42.0	1.88	13.5	
30	15 16.7	15 21.1	55 57.6	1.33	56 13.7	1.35	11 27.9	1.95	14.5	
31	15 25.5	15 29.8	56 29.9	1.34	56 45.9	1.32	12 15.8	2.05	15.5	
32	15 34.1	15 38.2	57 1.6	+1.28	57 16.8	+1.23	13 6.3	2.15	16.5	

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
THURSDAY 1.					SATURDAY 3.				
0	0 22 52.93	1.9904	S. 1° 5' 43.4	10.199	0	1 57 15.53	2.0165	N. 7° 2' 32.6	9.998
1	0 24 48.78	1.9913	0 55 31.5	10.203	1	1 59 16.60	2.0192	7 12 23.3	9.993
2	0 26 44.69	1.9922	0 45 19.0	10.213	2	2 1 17.84	2.0230	7 22 12.4	9.986
3	0 28 40.65	1.9932	0 35 5.9	10.222	3	2 3 19.24	2.0248	7 31 59.9	9.977
4	0 30 36.67	1.9942	0 24 52.3	10.230	4	2 5 20.81	2.0276	7 41 45.6	9.968
5	0 32 32.76	1.9953	0 14 38.2	10.238	5	2 7 22.55	2.0304	7 51 29.6	9.958
6	0 34 28.90	1.9963	S. 0 4 23.7	10.245	6	2 9 24.46	2.0333	8 1 11.8	9.948
7	0 36 25.12	1.9974	N. 0 5 51.2	10.261	7	2 11 26.54	2.0362	8 10 52.2	9.936
8	0 38 21.40	1.9986	0 16 6.4	10.266	8	2 13 28.80	2.0391	8 20 30.6	9.924
9	0 40 17.75	1.9998	0 26 22.0	10.261	9	2 15 31.24	2.0421	8 30 7.1	9.901
10	0 42 14.18	1.9410	0 36 37.8	10.265	10	2 17 33.85	2.0451	8 39 41.5	9.867
11	0 44 10.68	1.9423	0 46 53.8	10.268	11	2 19 36.65	2.0481	8 49 13.9	9.822
12	0 46 7.25	1.9437	0 57 9.9	10.271	12	2 21 39.63	2.0512	8 58 44.2	9.766
13	0 48 3.91	1.9450	1 7 26.2	10.273	13	2 23 42.79	2.0543	9 8 12.3	9.699
14	0 50 0.65	1.9464	1 17 42.7	10.275	14	2 25 46.15	2.0574	9 17 38.2	9.613
15	0 51 57.48	1.9479	1 27 59.2	10.275	15	2 27 49.69	2.0606	9 27 1.8	9.574
16	0 53 54.40	1.9494	1 38 15.7	10.275	16	2 29 53.42	2.0638	9 36 23.1	9.535
17	0 55 51.40	1.9509	1 48 32.2	10.274	17	2 31 57.35	2.0671	9 45 42.0	9.496
18	0 57 48.50	1.9524	1 58 48.6	10.272	18	2 34 1.47	2.0703	9 54 58.5	9.454
19	0 59 45.69	1.9540	2 9 4.8	10.270	19	2 36 5.79	2.0736	10 4 12.5	9.412
20	1 1 42.98	1.9556	2 19 20.9	10.266	20	2 38 10.30	2.0769	10 13 23.9	9.369
21	1 3 40.37	1.9573	2 29 36.8	10.262	21	2 40 15.02	2.0803	10 22 32.8	9.326
22	1 5 37.86	1.9590	2 39 52.4	10.257	22	2 42 19.94	2.0836	10 31 39.0	9.281
23	1 7 35.45	1.9608	N. 2 50 7.7	10.252	23	2 44 25.06	2.0870	N.10 40 42.5	9.236
FRIDAY 2.					SUNDAY 4.				
0	1 9 33.15	1.9626	N. 3 0 22.6	10.245	0	2 46 30.38	2.0904	N.10 49 43.3	9.190
1	1 11 30.96	1.9644	3 10 37.1	10.236	1	2 48 35.91	2.0939	10 58 41.3	9.143
2	1 13 28.87	1.9662	3 20 51.2	10.230	2	2 50 41.65	2.0974	11 7 36.4	9.096
3	1 15 26.90	1.9681	3 31 4.8	10.222	3	2 52 47.59	2.1009	11 16 28.6	9.046
4	1 17 25.04	1.9700	3 41 17.8	10.212	4	2 54 53.75	2.1044	11 25 17.9	8.996
5	1 19 23.31	1.9720	3 51 30.3	10.202	5	2 57 0.12	2.1080	11 34 4.2	8.946
6	1 21 21.69	1.9740	4 1 42.1	10.191	6	2 59 6.71	2.1115	11 42 47.3	8.893
7	1 23 20.19	1.9761	4 11 53.2	10.179	7	3 1 13.51	2.1151	11 51 27.4	8.841
8	1 25 18.82	1.9782	4 22 3.6	10.167	8	3 3 20.52	2.1187	12 0 4.3	8.787
9	1 27 17.57	1.9803	4 32 13.3	10.154	9	3 5 27.75	2.1224	12 8 37.9	8.733
10	1 29 16.45	1.9824	4 42 22.1	10.140	10	3 7 35.21	2.1260	12 17 8.2	8.678
11	1 31 15.46	1.9846	4 52 30.0	10.125	11	3 9 42.88	2.1297	12 25 35.2	8.623
12	1 33 14.61	1.9869	5 2 37.1	10.109	12	3 11 50.77	2.1333	12 33 58.9	8.566
13	1 35 13.89	1.9892	5 12 43.2	10.093	13	3 13 58.88	2.1370	12 42 19.1	8.507
14	1 37 13.31	1.9915	5 22 48.2	10.076	14	3 16 7.22	2.1408	12 50 35.7	8.448
15	1 39 12.87	1.9938	5 32 52.2	10.057	15	3 18 15.78	2.1446	12 58 48.8	8.388
16	1 41 12.57	1.9962	5 42 55.1	10.039	16	3 20 24.56	2.1483	13 6 58.3	8.327
17	1 43 12.41	1.9986	5 52 56.9	10.019	17	3 22 33.58	2.1521	13 15 4.1	8.266
18	1 45 12.40	2.0010	6 2 57.4	9.999	18	3 24 42.82	2.1560	13 23 6.2	8.203
19	1 47 12.53	2.0035	6 12 56.7	9.977	19	3 26 52.29	2.1597	13 31 4.5	8.140
20	1 49 12.82	2.0061	6 22 54.7	9.955	20	3 29 1.99	2.1636	13 38 58.9	8.076
21	1 51 13.26	2.0087	6 32 51.4	9.932	21	3 31 11.92	2.1674	13 46 49.5	8.010
22	1 53 13.86	2.0113	6 42 46.6	9.908	22	3 33 22.08	2.1713	13 54 36.1	7.944
23	1 55 14.61	2.0149	6 52 40.4	9.884	23	3 35 32.47	2.1752	14 2 18.8	7.877
24	1 57 15.53	2.0165	N. 7 2 32.6	9.868	24	3 37 43.10	2.1790	N.14 9 57.3	7.809

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
MONDAY 5.					WEDNESDAY 7.				
0	3 37 43.10	2.1790	N.14 9 57.3	7.009	0	5 26 46.62	2.3604	N.18 40 9.5	3.330
1	3 39 53.96	2.1839	14 17 31.8	7.540	1	5 29 8.34	2.3637	18 43 26.1	3.221
2	3 42 5.05	2.1888	14 25 2.1	7.470	2	5 31 30.26	2.3669	18 46 36.1	3.112
3	3 44 16.37	2.1907	14 32 28.2	7.399	3	5 33 52.37	2.3701	18 49 39.5	3.002
4	3 46 27.93	2.1946	14 39 50.0	7.327	4	5 36 14.66	2.3732	18 52 36.4	2.892
5	3 48 39.72	2.1985	14 47 7.5	7.255	5	5 38 37.15	2.3763	18 55 26.7	2.782
6	3 50 51.75	2.2025	14 54 20.6	7.183	6	5 40 59.82	2.3794	18 58 10.3	2.670
7	3 53 4.02	2.2064	15 1 29.3	7.107	7	5 43 22.67	2.3824	19 0 47.2	2.558
8	3 55 16.52	2.2103	15 8 33.5	7.032	8	5 45 45.70	2.3853	19 3 17.8	2.446
9	3 57 29.26	2.2143	15 15 33.2	6.956	9	5 48 8.91	2.3883	19 5 40.6	2.332
10	3 59 42.24	2.2182	15 22 28.3	6.880	10	5 50 32.29	2.3913	19 7 57.2	2.219
11	4 1 55.45	2.2222	15 29 18.7	6.802	11	5 52 55.85	2.3940	19 10 6.9	2.104
12	4 4 8.90	2.2261	15 36 4.5	6.728	12	5 55 19.57	2.3968	19 12 9.7	1.989
13	4 6 22.59	2.2301	15 42 45.5	6.648	13	5 57 43.46	2.3995	19 14 5.6	1.874
14	4 8 36.51	2.2341	15 49 21.7	6.568	14	6 0 7.51	2.4022	19 15 54.6	1.758
15	4 10 50.67	2.2380	15 55 53.0	6.481	15	6 2 31.72	2.4048	19 17 36.6	1.641
16	4 13 5.07	2.2420	16 2 19.4	6.399	16	6 4 56.09	2.4074	19 19 11.6	1.524
17	4 15 19.70	2.2459	16 8 40.9	6.316	17	6 7 20.62	2.4100	19 20 39.5	1.407
18	4 17 34.57	2.2498	16 14 57.4	6.232	18	6 9 45.29	2.4124	19 22 0.4	1.289
19	4 19 49.68	2.2537	16 21 8.8	6.147	19	6 12 10.11	2.4148	19 23 14.2	1.171
20	4 22 5.02	2.2575	16 27 15.0	6.061	20	6 14 35.07	2.4172	19 24 20.9	1.052
21	4 24 20.60	2.2615	16 33 16.1	5.974	21	6 17 0.18	2.4195	19 25 20.5	0.933
22	4 26 36.41	2.2655	16 39 12.0	5.887	22	6 19 25.42	2.4218	19 26 12.9	0.813
23	4 28 52.45	2.2694	N.16 45 2.6	5.800	23	6 21 50.79	2.4240	N.19 26 58.1	0.693
TUESDAY 6.					THURSDAY 8.				
0	4 31 8.73	2.2732	N.16 50 47.8	5.710	0	6 24 16.30	2.4263	N.19 27 36.2	0.573
1	4 33 25.94	2.2771	16 56 27.7	5.629	1	6 26 41.94	2.4283	19 28 7.0	0.453
2	4 35 41.98	2.2810	17 2 2.1	5.549	2	6 29 7.70	2.4304	19 28 30.5	0.331
3	4 37 58.96	2.2848	17 7 31.1	5.467	3	6 31 33.58	2.4324	19 28 46.8	0.210
4	4 40 16.16	2.2886	17 12 54.6	5.384	4	6 33 59.58	2.4343	19 28 55.7	0.088
5	4 42 33.50	2.2924	17 18 12.5	5.301	5	6 36 25.70	2.4362	19 28 57.4	0.033
6	4 44 51.25	2.2962	17 23 24.8	5.187	6	6 38 51.93	2.4380	19 28 51.7	0.166
7	4 47 9.14	2.2999	17 28 31.4	5.082	7	6 41 18.26	2.4397	19 28 38.7	0.278
8	4 49 27.25	2.3037	17 33 32.2	4.986	8	6 43 44.69	2.4414	19 28 18.4	0.401
9	4 51 45.59	2.3075	17 38 27.3	4.870	9	6 46 11.23	2.4431	19 27 50.6	0.524
10	4 54 4.15	2.3112	17 43 16.6	4.772	10	6 48 37.86	2.4446	19 27 15.5	0.647
11	4 56 22.93	2.3149	17 48 0.0	4.674	11	6 51 4.58	2.4461	19 26 33.0	0.770
12	4 58 41.94	2.3186	17 52 37.4	4.575	12	6 53 31.39	2.4476	19 25 43.0	0.894
13	5 1 1.16	2.3222	17 57 8.9	4.476	13	6 55 58.28	2.4490	19 24 45.7	1.018
14	5 3 20.61	2.3258	18 1 34.4	4.376	14	6 58 25.26	2.4503	19 23 40.9	1.142
15	5 5 40.27	2.3294	18 5 53.9	4.274	15	7 0 52.32	2.4515	19 22 28.7	1.266
16	5 8 0.14	2.3330	18 10 7.3	4.172	16	7 3 19.45	2.4527	19 21 9.0	1.390
17	5 10 20.22	2.3365	18 14 14.5	4.069	17	7 5 46.65	2.4539	19 19 41.9	1.514
18	5 12 40.52	2.3400	18 18 15.5	3.965	18	7 8 13.91	2.4550	19 18 7.3	1.638
19	5 15 1.03	2.3435	18 22 10.4	3.861	19	7 10 41.24	2.4560	19 16 25.3	1.762
20	5 17 21.74	2.3469	18 25 58.9	3.756	20	7 13 8.63	2.4569	19 14 35.9	1.886
21	5 19 42.66	2.3503	18 29 41.1	3.651	21	7 15 36.07	2.4578	19 12 39.0	2.011
22	5 22 3.78	2.3537	18 33 17.0	3.544	22	7 18 3.56	2.4586	19 10 34.6	2.135
23	5 24 25.10	2.3571	18 36 46.5	3.437	23	7 20 31.10	2.4594	19 8 22.7	2.260
24	5 26 46.62	2.3604	N.18 40 9.5	3.330	24	7 22 58.69	2.4601	N.19 6 3.4	2.384

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
FRIDAY 9.					SUNDAY 11.				
0	7 22 58.69	2.4601	N.19° 6' 3.4	2.384	0	9 20 47.53	2.4201	N.14° 53' 32.8	7.947
1	7 25 26.32	2.4607	19 3 36.6	2.608	1	9 23 13.29	2.4264	14 45 33.0	8.047
2	7 27 53.98	2.4613	19 1 2.4	2.632	2	9 25 38.94	2.4367	14 37 27.2	8.146
3	7 30 21.67	2.4618	18 58 20.7	2.767	3	9 28 4.50	2.4361	14 29 15.4	8.245
4	7 32 49.39	2.4623	18 55 31.6	2.981	4	9 30 29.95	2.4324	14 20 57.8	8.343
5	7 35 17.14	2.4627	18 52 35.1	3.004	5	9 32 55.30	2.4316	14 12 34.3	8.439
6	7 37 44.91	2.4630	18 49 31.1	3.128	6	9 35 20.55	2.4199	14 4 5.1	8.534
7	7 40 12.70	2.4633	18 46 19.7	3.261	7	9 37 45.69	2.4181	13 55 30.2	8.628
8	7 42 40.51	2.4635	18 43 0.9	3.376	8	9 40 10.72	2.4163	13 46 49.7	8.723
9	7 45 8.33	2.4637	18 39 34.8	3.498	9	9 42 35.64	2.4145	13 38 3.6	8.814
10	7 47 36.15	2.4638	18 36 1.2	3.621	10	9 45 0.45	2.4126	13 29 12.0	8.906
11	7 50 3.98	2.4638	18 32 20.3	3.744	11	9 47 25.16	2.4108	13 20 15.0	8.996
12	7 52 31.80	2.4638	18 28 31.9	3.866	12	9 49 49.75	2.4089	13 11 12.5	9.085
13	7 54 59.62	2.4637	18 24 36.3	3.988	13	9 52 14.23	2.4070	13 2 4.7	9.174
14	7 57 27.44	2.4636	18 20 33.3	4.110	14	9 54 39.60	2.4052	12 52 51.7	9.261
15	7 59 55.25	2.4634	18 16 23.0	4.232	15	9 57 2.85	2.4033	12 43 33.4	9.347
16	8 2 23.05	2.4631	18 12 5.5	4.353	16	9 59 26.99	2.4014	12 34 10.0	9.432
17	8 4 50.83	2.4628	18 7 40.7	4.474	17	10 1 51.01	2.3994	12 24 41.5	9.516
18	8 7 18.59	2.4625	18 3 8.6	4.594	18	10 4 14.92	2.3975	12 15 8.1	9.599
19	8 9 46.33	2.4621	17 58 29.3	4.714	19	10 6 38.72	2.3956	12 5 29.7	9.680
20	8 12 14.04	2.4616	17 53 42.9	4.834	20	10 9 2.40	2.3936	11 55 46.4	9.761
21	8 14 41.72	2.4611	17 48 49.3	4.953	21	10 11 25.96	2.3917	11 45 58.4	9.840
22	8 17 9.37	2.4605	17 43 48.5	5.073	22	10 13 49.40	2.3897	11 36 5.6	9.918
23	8 19 36.98	2.4599	N.17° 38' 40.6	5.191	23	10 16 12.72	2.3877	N.11° 26' 8.2	9.995
SATURDAY 10.					MONDAY 12.				
0	8 22 4.55	2.4592	N.17° 33' 25.6	5.309	0	10 18 35.93	2.3858	N.11° 16' 6.3	10.070
1	8 24 32.08	2.4585	17 28 3.6	5.428	1	10 20 59.02	2.3838	11 5 59.8	10.146
2	8 26 59.57	2.4577	17 22 34.5	5.543	2	10 23 21.99	2.3819	10 55 48.9	10.219
3	8 29 27.01	2.4569	17 16 58.4	5.659	3	10 25 44.84	2.3799	10 45 33.6	10.291
4	8 31 54.40	2.4560	17 11 15.4	5.775	4	10 28 7.58	2.3779	10 35 14.0	10.362
5	8 34 21.73	2.4551	17 5 25.4	5.890	5	10 30 30.20	2.3760	10 24 50.2	10.432
6	8 36 49.00	2.4541	16 59 28.6	6.004	6	10 32 52.70	2.3740	10 14 22.2	10.500
7	8 39 16.22	2.4531	16 53 24.9	6.118	7	10 35 15.08	2.3721	10 3 50.2	10.567
8	8 41 43.38	2.4521	16 47 14.4	6.231	8	10 37 37.35	2.3701	9 53 14.2	10.633
9	8 44 10.47	2.4510	16 40 57.2	6.344	9	10 39 59.50	2.3682	9 42 34.3	10.697
10	8 46 37.50	2.4498	16 34 33.2	6.456	10	10 42 21.53	2.3662	9 31 50.5	10.760
11	8 49 4.45	2.4487	16 28 2.5	6.567	11	10 44 43.45	2.3642	9 21 3.0	10.822
12	8 51 31.34	2.4475	16 21 25.0	6.678	12	10 47 5.25	2.3624	9 10 11.8	10.883
13	8 53 58.15	2.4462	16 14 41.0	6.788	13	10 49 26.94	2.3606	8 59 17.0	10.943
14	8 56 24.88	2.4448	16 7 50.4	6.898	14	10 51 48.51	2.3588	8 48 18.7	11.001
15	8 58 51.53	2.4435	16 0 53.3	7.006	15	10 54 9.97	2.3569	8 37 16.9	11.058
16	9 1 18.10	2.4422	15 53 49.6	7.114	16	10 56 31.31	2.3548	8 26 11.7	11.113
17	9 3 44.59	2.4408	15 46 39.6	7.221	17	10 58 52.54	2.3529	8 15 3.3	11.167
18	9 6 11.00	2.4394	15 39 23.1	7.327	18	11 1 13.66	2.3511	8 3 51.7	11.220
19	9 8 37.31	2.4379	15 32 0.3	7.433	19	11 3 34.67	2.3492	7 52 36.9	11.271
20	9 11 3.54	2.4364	15 24 31.2	7.537	20	11 5 55.57	2.3474	7 41 19.1	11.321
21	9 13 29.68	2.4348	15 16 55.8	7.641	21	11 8 16.35	2.3455	7 29 58.3	11.370
22	9 15 55.73	2.4333	15 9 14.3	7.744	22	11 10 37.03	2.3437	7 18 34.7	11.418
23	9 18 21.68	2.4317	15 1 26.6	7.846	23	11 12 57.60	2.3419	7 7 8.2	11.464
24	9 20 47.53	2.4301	N.14° 53' 32.8	7.947	24	11 15 18.06	2.3401	N. 6° 55' 39.0	11.508

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
TUESDAY 13.					THURSDAY 15.				
0	11 15 18.06	2.3401	N. 6 55 39.0	11.508	0	13 5 58.93	2.2807	S. 2 41 30.8	12.001
1	11 17 38.42	2.3384	6 44 7.2	11.551	1	13 8 15.75	2.2800	2 53 30.1	11.977
2	11 19 58.67	2.3366	6 32 32.8	11.593	2	13 10 32.53	2.2794	3 5 28.1	11.953
3	11 22 18.82	2.3349	6 20 56.0	11.634	3	13 12 49.28	2.2788	3 17 24.5	11.927
4	11 24 38.86	2.3332	6 9 16.7	11.678	4	13 15 5.99	2.2782	3 29 19.3	11.899
5	11 26 58.80	2.3315	5 57 35.2	11.711	5	13 17 22.67	2.2777	3 41 12.4	11.871
6	11 29 18.64	2.3299	5 45 51.4	11.747	6	13 19 39.32	2.2772	3 53 3.8	11.841
7	11 31 38.39	2.3282	5 34 5.5	11.782	7	13 21 55.93	2.2766	4 4 53.3	11.809
8	11 33 58.03	2.3266	5 22 17.6	11.816	8	13 24 12.51	2.2761	4 16 40.9	11.776
9	11 36 17.58	2.3250	5 10 27.7	11.848	9	13 26 29.07	2.2757	4 28 26.5	11.742
10	11 38 37.03	2.3234	4 58 35.9	11.878	10	13 28 45.60	2.2752	4 40 10.0	11.707
11	11 40 56.39	2.3218	4 46 42.3	11.907	11	13 31 2.10	2.2748	4 51 51.3	11.670
12	11 43 15.65	2.3202	4 34 47.0	11.935	12	13 33 18.57	2.2744	5 3 30.4	11.632
13	11 45 34.82	2.3186	4 22 50.1	11.962	13	13 35 35.02	2.2740	5 15 7.1	11.593
14	11 47 53.91	2.3173	4 10 51.6	11.987	14	13 37 51.45	2.2736	5 26 41.5	11.553
15	11 50 12.90	2.3158	3 58 51.7	12.010	15	13 40 7.85	2.2732	5 38 13.5	11.512
16	11 52 31.80	2.3143	3 46 50.4	12.033	16	13 42 24.24	2.2729	5 49 43.0	11.470
17	11 54 50.62	2.3129	3 34 47.7	12.054	17	13 44 40.60	2.2726	6 1 9.9	11.426
18	11 57 9.35	2.3115	3 22 43.9	12.073	18	13 46 56.95	2.2722	6 12 34.1	11.381
19	11 59 28.00	2.3101	3 10 39.0	12.091	19	13 49 13.28	2.2720	6 23 55.6	11.336
20	12 1 46.56	2.3087	2 58 33.0	12.107	20	13 51 29.59	2.2717	6 35 14.3	11.287
21	12 4 5.05	2.3074	2 46 26.1	12.122	21	13 53 45.88	2.2715	6 46 30.1	11.238
22	12 6 23.45	2.3061	2 34 18.3	12.136	22	13 56 2.16	2.2712	6 57 42.9	11.188
23	12 8 41.77	2.3048	N. 2 22 9.8	12.148	23	13 58 18.43	2.2710	S. 7 8 52.7	11.137
WEDNESDAY 14.					FRIDAY 16.				
0	12 11 0.02	2.3035	N. 2 10 0.6	12.159	0	14 0 34.68	2.2708	S. 7 19 59.4	11.085
1	12 13 18.19	2.3023	1 57 50.8	12.168	1	14 2 50.92	2.2706	7 31 2.9	11.033
2	12 15 36.29	2.3011	1 45 40.4	12.177	2	14 5 7.15	2.2704	7 42 3.2	10.978
3	12 17 54.32	2.2999	1 33 29.6	12.183	3	14 7 23.37	2.2702	7 53 0.3	10.923
4	12 20 12.28	2.2987	1 21 18.4	12.188	4	14 9 39.58	2.2701	8 3 54.0	10.867
5	12 22 30.17	2.2976	1 9 6.9	12.193	5	14 11 55.78	2.2699	8 14 44.4	10.810
6	12 24 47.99	2.2966	0 56 55.3	12.196	6	14 14 11.98	2.2698	8 25 31.3	10.752
7	12 27 5.75	2.2964	0 44 43.5	12.196	7	14 16 28.16	2.2697	8 36 14.6	10.692
8	12 29 23.44	2.2943	0 32 31.8	12.196	8	14 18 44.34	2.2696	8 46 54.3	10.631
9	12 31 41.07	2.2933	0 20 20.1	12.193	9	14 21 0.51	2.2694	8 57 30.4	10.569
10	12 33 58.63	2.2923	N. 0 8 8.5	12.190	10	14 23 16.67	2.2693	9 8 2.7	10.506
11	12 36 16.14	2.2913	S. 0 4 2.8	12.186	11	14 25 32.83	2.2693	9 18 31.1	10.442
12	12 38 33.58	2.2903	0 16 13.7	12.180	12	14 27 48.98	2.2692	9 28 55.7	10.377
13	12 40 50.97	2.2894	0 28 24.3	12.172	13	14 30 5.13	2.2691	9 39 16.3	10.311
14	12 43 8.31	2.2886	0 40 34.4	12.163	14	14 32 21.27	2.2690	9 49 33.1	10.245
15	12 45 25.59	2.2876	0 52 43.9	12.154	15	14 34 37.41	2.2689	9 59 45.8	10.178
16	12 47 42.82	2.2867	1 4 52.8	12.142	16	14 36 53.55	2.2689	10 9 54.4	10.110
17	12 49 59.99	2.2859	1 17 1.0	12.130	17	14 39 9.68	2.2688	10 19 59.0	10.041
18	12 52 17.12	2.2851	1 29 8.4	12.116	18	14 41 25.81	2.2688	10 29 59.3	9.970
19	12 54 34.20	2.2843	1 41 14.8	12.100	19	14 43 41.93	2.2687	10 39 55.4	9.899
20	12 56 51.24	2.2835	1 53 20.3	12.083	20	14 45 58.06	2.2687	10 49 47.2	9.827
21	12 59 8.23	2.2826	2 5 24.7	12.064	21	14 48 14.18	2.2687	10 59 34.6	9.753
22	13 1 25.17	2.2821	2 17 28.0	12.045	22	14 50 30.30	2.2686	11 9 17.6	9.679
23	13 3 42.07	2.2814	2 29 30.1	12.023	23	14 52 46.41	2.2686	11 18 56.1	9.603
24	13 5 58.93	2.2807	S. 2 41 30.8	12.001	24	14 55 2.53	2.2685	S. 11 28 30.0	9.527

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SATURDAY 17.					MONDAY 19.				
0	14 55 2.53	2.2665	S.11° 26' 30.0	9.827	0	16 43 43.93	2.2646	S.17° 25' 30.9	5.147
1	14 57 18.64	2.2665	11 37 59.4	9.451	1	16 45 59.17	2.2637	17 30 36.7	5.045
2	14 59 34.75	2.2664	11 47 24.2	9.374	2	16 48 14.37	2.2629	17 35 36.3	4.944
3	15 1 50.85	2.2664	11 56 44.3	9.296	3	16 50 29.52	2.2621	17 40 29.9	4.842
4	15 4 6.96	2.2663	12 5 59.7	9.217	4	16 52 44.62	2.2612	17 45 17.4	4.740
5	15 6 23.06	2.2663	12 15 10.3	9.137	5	16 54 59.67	2.2604	17 49 58.7	4.638
6	15 8 39.16	2.2663	12 24 16.1	9.056	6	16 57 14.67	2.2595	17 54 33.9	4.536
7	15 10 55.25	2.2661	12 33 17.1	8.975	7	16 59 29.61	2.2586	17 59 3.0	4.433
8	15 13 11.34	2.2661	12 42 13.2	8.893	8	17 1 44.50	2.2576	18 3 25.9	4.331
9	15 15 27.43	2.2660	12 51 4.3	8.810	9	17 3 59.33	2.2566	18 7 42.7	4.228
10	15 17 43.51	2.2679	12 59 50.4	8.727	10	17 6 14.10	2.2556	18 11 53.3	4.125
11	15 19 59.58	2.2679	13 8 31.5	8.642	11	17 8 28.81	2.2546	18 15 57.7	4.022
12	15 22 15.65	2.2678	13 17 7.4	8.557	12	17 10 43.45	2.2536	18 19 56.0	3.919
13	15 24 31.71	2.2677	13 25 38.3	8.472	13	17 12 58.03	2.2525	18 23 48.1	3.817
14	15 26 47.77	2.2676	13 34 4.0	8.386	14	17 15 12.54	2.2514	18 27 34.0	3.714
15	15 29 3.82	2.2675	13 42 24.5	8.298	15	17 17 26.99	2.2502	18 31 13.8	3.611
16	15 31 19.87	2.2674	13 50 39.8	8.210	16	17 19 41.37	2.2490	18 34 47.3	3.508
17	15 33 35.90	2.2672	13 58 49.8	8.122	17	17 21 55.67	2.2478	18 38 14.7	3.404
18	15 35 51.93	2.2670	14 6 54.5	8.033	18	17 24 9.91	2.2466	18 41 35.9	3.301
19	15 38 7.95	2.2669	14 14 53.8	7.944	19	17 26 24.07	2.2454	18 44 50.9	3.198
20	15 40 23.95	2.2667	14 22 47.7	7.854	20	17 28 38.15	2.2441	18 47 59.7	3.095
21	15 42 39.95	2.2665	14 30 36.3	7.763	21	17 30 52.16	2.2428	18 51 2.3	2.992
22	15 44 55.93	2.2663	14 38 19.3	7.672	22	17 33 6.08	2.2414	18 53 58.8	2.889
23	15 47 11.90	2.2660	S.14° 45' 56.8	7.580	23	17 35 19.93	2.2400	S.18° 56' 49.0	2.786
SUNDAY 18.					TUESDAY 20.				
0	15 49 27.85	2.2658	S.14° 53' 28.9	7.488	0	17 37 33.69	2.2386	S.18° 59' 33.1	2.683
1	15 51 43.79	2.2656	15 0 55.4	7.395	1	17 39 47.36	2.2372	19 2 11.0	2.580
2	15 53 59.72	2.2653	15 8 16.3	7.301	2	17 42 0.95	2.2357	19 4 42.7	2.477
3	15 56 15.63	2.2650	15 15 31.6	7.208	3	17 44 14.45	2.2343	19 7 8.3	2.374
4	15 58 31.52	2.2646	15 22 41.2	7.113	4	17 46 27.86	2.2327	19 9 27.7	2.272
5	16 0 47.39	2.2643	15 29 45.2	7.019	5	17 48 41.18	2.2312	19 11 40.9	2.168
6	16 3 3.25	2.2640	15 36 43.5	6.923	6	17 50 54.41	2.2296	19 13 48.0	2.067
7	16 5 19.08	2.2636	15 43 36.0	6.828	7	17 53 7.54	2.2280	19 15 49.0	1.966
8	16 7 34.89	2.2633	15 50 22.8	6.732	8	17 55 20.57	2.2264	19 17 43.8	1.863
9	16 9 50.68	2.2630	15 57 3.8	6.635	9	17 57 33.51	2.2247	19 19 32.5	1.760
10	16 12 6.45	2.2626	16 3 39.0	6.538	10	17 59 46.34	2.2230	19 21 15.0	1.656
11	16 14 22.19	2.2621	16 10 8.4	6.441	11	18 1 59.07	2.2213	19 22 51.5	1.556
12	16 16 37.91	2.2617	16 16 32.0	6.344	12	18 4 11.70	2.2196	19 24 21.8	1.455
13	16 18 53.60	2.2612	16 22 49.7	6.246	13	18 6 24.22	2.2178	19 25 46.0	1.353
14	16 21 9.25	2.2607	16 29 1.5	6.147	14	18 8 36.63	2.2160	19 27 4.2	1.252
15	16 23 24.88	2.2602	16 35 7.3	6.048	15	18 10 48.94	2.2143	19 28 16.3	1.151
16	16 25 40.48	2.2596	16 41 7.3	5.949	16	18 13 1.14	2.2125	19 29 22.3	1.050
17	16 27 56.04	2.2591	16 47 1.2	5.850	17	18 15 13.22	2.2106	19 30 22.3	0.950
18	16 30 11.57	2.2586	16 52 49.2	5.750	18	18 17 25.19	2.2086	19 31 16.3	0.849
19	16 32 27.06	2.2579	16 58 31.2	5.650	19	18 19 37.05	2.2067	19 32 4.3	0.749
20	16 34 42.52	2.2573	17 4 7.2	5.550	20	18 21 48.79	2.2047	19 32 46.3	0.648
21	16 36 57.93	2.2566	17 9 37.2	5.450	21	18 24 0.42	2.2027	19 33 22.2	0.549
22	16 39 13.81	2.2559	17 15 1.2	5.349	22	18 26 11.92	2.2006	19 33 52.2	0.449
23	16 41 28.64	2.2553	17 20 19.1	5.248	23	18 28 23.31	2.1986	19 34 16.2	0.350
24	16 43 43.93	2.2546	S.17° 25' 30.9	5.147	24	18 30 34.58	2.1966	S.19° 34' 34.2	0.251

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
WEDNESDAY 21.					FRIDAY 23.				
0	18 30 34.58	2.1808	S.19 34' 34.2"	0.261	0	20 12 52.09	2.0718	S.17 58' 50.0"	4.093
1	18 32 45.72	2.1847	19 34 46.3	0.182	1	20 14 56.29	2.0698	17 54 42.0	4.173
2	18 34 56.74	2.1826	19 34 52.5	0.054	2	20 17 0.34	2.0692	17 50 29.3	4.253
3	18 37 7.63	2.1805	19 34 52.8	0.044	3	20 19 4.24	2.0687	17 46 11.7	4.332
4	18 39 18.40	2.1784	19 34 47.2	0.142	4	20 21 7.99	2.0612	17 41 49.4	4.411
5	18 41 29.04	2.1762	19 34 35.7	0.240	5	20 23 11.58	2.0698	17 37 22.4	4.490
6	18 43 39.55	2.1741	19 34 18.4	0.337	6	20 25 15.03	2.0661	17 32 50.7	4.568
7	18 45 49.93	2.1719	19 33 55.3	0.434	7	20 27 18.32	2.0626	17 28 14.8	4.645
8	18 48 0.18	2.1697	19 33 26.3	0.530	8	20 29 21.46	2.0611	17 23 33.2	4.722
9	18 50 10.29	2.1675	19 32 51.6	0.627	9	20 31 24.46	2.0496	17 18 47.6	4.799
10	18 52 20.27	2.1652	19 32 11.1	0.722	10	20 33 27.30	2.0461	17 13 57.4	4.875
11	18 54 30.12	2.1629	19 31 24.8	0.819	11	20 35 30.00	2.0437	17 9 2.6	4.951
12	18 56 39.82	2.1606	19 30 32.9	0.914	12	20 37 32.54	2.0412	17 4 3.3	5.026
13	18 58 49.39	2.1583	19 29 35.2	1.009	13	20 39 34.94	2.0388	16 58 59.5	5.101
14	19 0 58.82	2.1560	19 28 31.8	1.104	14	20 41 37.19	2.0363	16 53 51.2	5.175
15	19 3 8.12	2.1537	19 27 22.7	1.199	15	20 43 39.30	2.0339	16 48 38.4	5.249
16	19 5 17.27	2.1514	19 26 7.9	1.293	16	20 45 41.26	2.0315	16 43 21.2	5.323
17	19 7 26.28	2.1490	19 24 47.5	1.388	17	20 47 43.08	2.0291	16 37 59.7	5.395
18	19 9 35.15	2.1466	19 23 21.5	1.480	18	20 49 44.75	2.0267	16 32 33.8	5.468
19	19 11 43.88	2.1442	19 21 49.9	1.573	19	20 51 46.28	2.0243	16 27 3.6	5.540
20	19 13 52.46	2.1418	19 20 12.8	1.665	20	20 53 47.67	2.0219	16 21 29.0	5.611
21	19 16 0.90	2.1394	19 18 30.1	1.757	21	20 55 48.91	2.0196	16 15 50.2	5.682
22	19 18 9.19	2.1370	19 16 41.9	1.849	22	20 57 50.02	2.0172	16 10 7.2	5.753
23	19 20 17.34	2.1345	S.19 14 48.2	1.941	23	20 59 50.98	2.0148	S.16 4 19.9	5.822
THURSDAY 22.					SATURDAY 24.				
0	19 22 25.34	2.1321	S.19 12 49.1	2.032	0	21 1 51.81	2.0126	S.15 58 28.5	5.892
1	19 24 33.19	2.1296	19 10 44.5	2.122	1	21 3 52.50	2.0102	15 52 32.9	5.961
2	19 26 40.90	2.1272	19 8 34.4	2.213	2	21 5 53.05	2.0081	15 46 33.2	6.030
3	19 28 48.45	2.1247	19 6 18.9	2.303	3	21 7 53.47	2.0060	15 40 29.3	6.098
4	19 30 55.86	2.1222	19 3 58.1	2.392	4	21 9 53.75	2.0038	15 34 21.4	6.165
5	19 33 3.12	2.1197	19 1 31.9	2.481	5	21 11 53.90	2.0014	15 28 9.5	6.232
6	19 35 10.22	2.1173	18 59 0.3	2.570	6	21 13 53.91	1.9992	15 21 53.5	6.299
7	19 37 17.18	2.1147	18 56 23.5	2.658	7	21 15 53.80	1.9970	15 15 33.5	6.365
8	19 39 23.98	2.1121	18 53 41.4	2.746	8	21 17 53.56	1.9948	15 9 9.6	6.431
9	19 41 30.64	2.1096	18 50 54.0	2.833	9	21 19 53.18	1.9927	15 2 41.8	6.496
10	19 43 37.14	2.1071	18 48 1.4	2.920	10	21 21 52.68	1.9906	14 56 10.1	6.561
11	19 45 43.49	2.1045	18 45 3.6	3.007	11	21 23 52.05	1.9885	14 49 34.5	6.625
12	19 47 49.69	2.1020	18 42 0.6	3.093	12	21 25 51.31	1.9864	14 42 55.1	6.689
13	19 49 55.73	2.0994	18 38 52.5	3.178	13	21 27 50.43	1.9844	14 36 11.9	6.752
14	19 52 1.62	2.0969	18 35 39.2	3.264	14	21 29 49.43	1.9823	14 29 24.8	6.815
15	19 54 7.36	2.0943	18 32 20.8	3.349	15	21 31 48.31	1.9803	14 22 34.0	6.877
16	19 56 12.94	2.0918	18 28 57.4	3.433	16	21 33 47.07	1.9784	14 15 39.5	6.939
17	19 58 18.37	2.0892	18 25 28.8	3.517	17	21 35 45.72	1.9764	14 8 41.3	7.000
18	20 0 23.65	2.0867	18 21 55.3	3.601	18	21 37 44.25	1.9745	14 1 39.5	7.061
19	20 2 28.77	2.0841	18 18 16.8	3.684	19	21 39 42.66	1.9726	13 54 34.0	7.121
20	20 4 33.74	2.0815	18 14 33.3	3.766	20	21 41 40.96	1.9707	13 47 24.9	7.181
21	20 6 38.56	2.0790	18 10 44.8	3.849	21	21 43 39.14	1.9688	13 40 12.2	7.241
22	20 8 43.22	2.0764	18 6 51.4	3.930	22	21 45 37.22	1.9670	13 32 56.0	7.300
23	20 10 47.73	2.0739	18 2 53.1	4.013	23	21 47 35.18	1.9652	13 25 36.3	7.358
24	20 12 52.09	2.0713	S.17 58 50.0	4.098	24	21 49 33.05	1.9634	S.13 18 13.1	7.416

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SUNDAY 25.					TUESDAY 27.				
0	21 49 33.05	1.9634	S. 13° 18' 13.1	7.416	0	23 22 21.11	1.9167	S. 6° 25' 10.7	9.595
1	21 51 30.80	1.9617	13 10 46.4	7.473	1	23 24 16.11	1.9166	6 15 34.0	9.638
2	21 53 28.45	1.9600	13 3 16.3	7.530	2	23 26 11.10	1.9166	6 5 55.4	9.680
3	21 55 26.00	1.9583	12 55 42.8	7.586	3	23 28 6.10	1.9166	5 56 14.9	9.691
4	21 57 23.45	1.9566	12 48 6.0	7.642	4	23 30 1.10	1.9167	5 46 32.5	9.731
5	21 59 20.80	1.9550	12 40 25.8	7.698	5	23 31 56.10	1.9168	5 36 48.3	9.761
6	22 1 18.05	1.9534	12 32 42.3	7.753	6	23 33 51.11	1.9169	5 27 2.3	9.781
7	22 3 15.20	1.9518	12 24 55.5	7.807	7	23 35 46.13	1.9171	5 17 14.6	9.810
8	22 5 12.27	1.9503	12 17 5.4	7.861	8	23 37 41.16	1.9173	5 7 25.2	9.838
9	22 7 9.24	1.9488	12 9 12.2	7.914	9	23 39 36.20	1.9176	4 57 34.1	9.865
10	22 9 6.12	1.9473	12 1 15.7	7.967	10	23 41 31.26	1.9178	4 47 41.3	9.892
11	22 11 2.92	1.9458	11 53 16.1	8.019	11	23 43 26.34	1.9182	4 37 47.0	9.919
12	22 12 59.63	1.9444	11 45 13.4	8.071	12	23 45 21.45	1.9186	4 27 51.1	9.945
13	22 14 56.26	1.9431	11 37 7.5	8.123	13	23 47 16.58	1.9190	4 17 53.6	9.970
14	22 16 52.80	1.9417	11 28 58.6	8.174	14	23 49 11.73	1.9195	4 7 54.6	9.995
15	22 18 49.26	1.9404	11 20 46.7	8.224	15	23 51 6.92	1.9200	3 57 54.2	10.019
16	22 20 45.64	1.9391	11 12 31.8	8.274	16	23 53 2.13	1.9206	3 47 52.3	10.043
17	22 22 41.95	1.9378	11 4 13.8	8.323	17	23 54 57.38	1.9211	3 37 49.1	10.068
18	22 24 38.19	1.9366	10 55 53.0	8.373	18	23 56 52.67	1.9217	3 27 44.4	10.088
19	22 26 34.35	1.9354	10 47 29.2	8.420	19	23 58 47.99	1.9224	3 17 38.5	10.110
20	22 28 30.44	1.9343	10 39 2.5	8.468	20	0 0 43.36	1.9231	3 7 31.3	10.131
21	22 30 26.46	1.9331	10 30 33.0	8.515	21	0 2 38.77	1.9239	2 57 22.8	10.151
22	22 32 22.42	1.9320	10 22 0.7	8.562	22	0 4 34.22	1.9247	2 47 13.2	10.171
23	22 34 18.31	1.9310	S. 10° 13' 25.6	8.609	23	0 6 29.73	1.9255	S. 2° 37' 2.4	10.190
MONDAY 26.					WEDNESDAY 28.				
0	22 36 14.14	1.9300	S. 10° 4' 47.7	8.655	0	0 8 25.28	1.9264	S. 2° 26' 50.4	10.208
1	22 38 9.91	1.9291	9 56 7.0	8.700	1	0 10 20.89	1.9273	2 16 37.3	10.226
2	22 40 5.63	1.9281	9 47 23.7	8.745	2	0 12 16.56	1.9283	2 6 23.2	10.244
3	22 42 1.29	1.9272	9 38 37.7	8.789	3	0 14 12.29	1.9293	1 56 8.1	10.260
4	22 43 56.89	1.9263	9 29 49.0	8.833	4	0 16 8.08	1.9304	1 45 52.0	10.276
5	22 45 52.44	1.9254	9 20 57.8	8.876	5	0 18 3.93	1.9314	1 35 35.0	10.291
6	22 47 47.94	1.9246	9 12 3.9	8.919	6	0 19 59.85	1.9326	1 25 17.1	10.305
7	22 49 43.40	1.9238	9 3 7.6	8.961	7	0 21 55.84	1.9337	1 14 58.3	10.319
8	22 51 38.81	1.9231	8 54 8.7	9.003	8	0 23 51.90	1.9350	1 4 38.8	10.333
9	22 53 34.17	1.9224	8 45 7.3	9.045	9	0 25 48.04	1.9363	0 54 18.5	10.345
10	22 55 29.49	1.9217	8 36 3.5	9.084	10	0 27 44.25	1.9376	0 43 57.4	10.357
11	22 57 24.78	1.9211	8 26 57.2	9.124	11	0 29 40.55	1.9389	0 33 35.6	10.368
12	22 59 20.03	1.9206	8 17 48.6	9.163	12	0 31 36.93	1.9403	0 23 13.2	10.378
13	23 1 15.25	1.9200	8 8 37.6	9.202	13	0 33 33.39	1.9418	0 12 50.2	10.388
14	23 3 10.44	1.9195	7 59 24.3	9.241	14	0 35 29.94	1.9433	S. 0° 2' 26.6	10.398
15	23 5 5.60	1.9191	7 50 8.7	9.279	15	0 37 26.58	1.9448	N. 0° 7' 57.5	10.406
16	23 7 0.73	1.9186	7 40 50.9	9.316	16	0 39 23.32	1.9464	0 18 22.1	10.414
17	23 8 55.83	1.9183	7 31 30.8	9.353	17	0 41 20.15	1.9480	0 28 47.2	10.421
18	23 10 50.92	1.9179	7 22 8.5	9.389	18	0 43 17.07	1.9496	0 39 12.6	10.427
19	23 12 45.98	1.9176	7 12 44.1	9.426	19	0 45 14.10	1.9513	0 49 38.4	10.432
20	23 14 41.03	1.9174	7 3 17.6	9.460	20	0 47 11.23	1.9531	1 0 4.5	10.437
21	23 16 36.07	1.9171	6 53 48.9	9.496	21	0 49 8.47	1.9548	1 10 30.8	10.441
22	23 18 31.09	1.9169	6 44 18.2	9.529	22	0 51 5.81	1.9567	1 20 57.4	10.444
23	23 20 26.10	1.9168	6 34 45.5	9.562	23	0 53 3.27	1.9586	1 31 24.1	10.447
24	23 22 21.11	1.9167	S. 6° 25' 10.7	9.595	24	0 55 0.84	1.9605	N. 1° 41' 50.9	10.449

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
THURSDAY 29.					SATURDAY 31.				
0	0 55 0.84	1.9605	N. 1° 41' 50.9	10.449	0	2 32 4.93	2.0961	N. 9° 50' 1.1	9.556
1	0 56 58.53	1.9624	1 52 17.9	10.450	1	2 34 10.93	2.1018	9 59 33.2	9.515
2	0 58 56.33	1.9644	2 2 44.9	10.450	2	2 36 17.15	2.1056	10 9 2.9	9.473
3	1 0 54.26	1.9665	2 13 11.9	10.450	3	2 38 23.59	2.1093	10 18 30.0	9.430
4	1 2 52.31	1.9686	2 23 38.8	10.449	4	2 40 30.26	2.1130	10 27 54.5	9.386
5	1 4 50.49	1.9707	2 34 5.7	10.447	5	2 42 37.16	2.1168	10 37 16.3	9.341
6	1 6 48.79	1.9729	2 44 32.5	10.444	6	2 44 44.28	2.1206	10 46 35.4	9.295
7	1 8 47.23	1.9750	2 54 59.0	10.440	7	2 46 51.63	2.1244	10 55 51.7	9.248
8	1 10 45.80	1.9773	3 5 25.3	10.436	8	2 48 59.21	2.1283	11 5 5.1	9.200
9	1 12 44.50	1.9796	3 15 51.3	10.431	9	2 51 7.03	2.1322	11 14 15.7	9.151
10	1 14 43.34	1.9819	3 26 16.9	10.426	10	2 53 15.07	2.1361	11 23 23.2	9.101
11	1 16 42.33	1.9843	3 36 42.2	10.418	11	2 55 23.35	2.1400	11 32 27.7	9.050
12	1 18 41.45	1.9867	3 47 7.0	10.410	12	2 57 31.87	2.1439	11 41 29.1	8.998
13	1 20 40.73	1.9892	3 57 31.4	10.402	13	2 59 40.62	2.1479	11 50 27.4	8.945
14	1 22 40.15	1.9916	4 7 55.2	10.392	14	3 1 49.61	2.1518	11 59 22.5	8.891
15	1 24 39.72	1.9943	4 18 18.5	10.382	15	3 3 58.84	2.1556	12 8 14.3	8.836
16	1 26 39.45	1.9967	4 28 41.1	10.371	16	3 6 8.31	2.1596	12 17 2.8	8.780
17	1 28 39.33	1.9993	4 39 3.0	10.360	17	3 8 18.02	2.1636	12 25 47.9	8.723
18	1 30 39.37	2.0020	4 49 24.3	10.347	18	3 10 27.97	2.1676	12 34 29.6	8.665
19	1 32 39.57	2.0047	4 59 44.7	10.334	19	3 12 38.16	2.1719	12 43 7.8	8.606
20	1 34 39.93	2.0074	5 10 4.3	10.320	20	3 14 48.60	2.1759	12 51 42.4	8.546
21	1 36 40.46	2.0103	5 20 23.1	10.304	21	3 16 59.27	2.1800	13 0 13.3	8.485
22	1 38 41.15	2.0130	5 30 40.9	10.289	22	3 19 10.19	2.1840	13 8 40.6	8.423
23	1 40 42.02	2.0158	N. 5 40 57.7	10.272	23	3 21 21.36	2.1881	N.13 17 4.1	8.360
FRIDAY 30.					SUNDAY, NOVEMBER 1.				
0	1 42 43.05	2.0187	N. 5 51 13.4	10.254	0	3 23 32.77	2.1923	N.13 25 23.8	8.296
1	1 44 44.26	2.0216	6 1 28.1	10.235	PHASES OF THE MOON.				
2	1 46 45.64	2.0246	6 11 41.6	10.216					
3	1 48 47.21	2.0276	6 21 54.0	10.196					
4	1 50 48.96	2.0306	6 32 5.1	10.174					
5	1 52 50.89	2.0337	6 42 14.9	10.152	<div>☉ Full Moon,^{d h m} ☾ Last Quarter, ● New Moon, ☽ First Quarter, ☉ Full Moon,</div>				
6	1 54 53.00	2.0368	6 52 23.4	10.129					
7	1 56 55.30	2.0399	7 2 30.5	10.105					
8	1 58 57.79	2.0431	7 12 36.1	10.081					
9	2 1 0.47	2.0463	7 22 40.2	10.056	<div>☾ Perigee,^{d h} ☾ Apogee,</div>				
10	2 3 3.34	2.0496	7 32 42.7	10.028					
11	2 5 6.41	2.0529	7 42 43.6	10.001					
12	2 7 9.67	2.0562	7 52 42.7	9.972					
13	2 9 13.13	2.0594	8 2 40.2	9.943					
14	2 11 16.80	2.0628	8 12 35.8	9.912					
15	2 13 20.67	2.0662	8 22 29.6	9.881					
16	2 15 24.74	2.0696	8 32 21.5	9.849					
17	2 17 29.02	2.0731	8 42 11.5	9.815					
18	2 19 33.51	2.0766	8 51 59.4	9.781					
19	2 21 38.21	2.0801	9 1 45.2	9.746					
20	2 23 43.12	2.0836	9 11 28.9	9.710					
21	2 25 48.25	2.0873	9 21 10.4	9.673					
22	2 27 53.59	2.0908	9 30 49.7	9.635					
23	2 29 59.15	2.0945	9 40 26.6	9.596					
24	2 32 4.93	2.0981	N. 9 50 1.1	9.556					

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Dist.	III ^h .	P. L. of Dist.	VI ^h .	P. L. of Dist.	IX ^h .	P. L. of Dist.
1	Fomalhaut W.	36° 32' 36"	2790	37° 47' 49"	2723	39° 4' 12"	2663	40° 21' 39"	2608
	α Pegasi W.	26 7 0	2390	26 59 9	2114	27 54 36	2085	28 53 2	2029
	Pollux E.	106 50 19	2973	105 19 33	2965	103 48 36	2967	102 17 28	2948
	Mars E.	114 49 53	3124	113 22 12	3115	111 54 21	3105	110 26 19	3096
2	Fomalhaut W.	47 2 29	2392	48 24 46	2368	49 47 50	2326	51 11 31	2298
	α Pegasi W.	34 21 28	2008	35 33 0	2013	36 46 7	2027	38 0 41	2041
	Pollux E.	94 39 9	2906	93 6 58	2909	91 34 36	2890	90 2 4	2888
	Mars E.	103 3 37	3056	101 34 34	3047	100 5 20	3039	98 35 55	3030
3	Fomalhaut W.	58 17 51	2174	59 44 31	2153	61 11 36	2123	62 39 5	2114
	α Pegasi W.	44 31 14	2464	45 52 18	2421	47 14 11	2380	48 36 50	2344
	Jupiter W.	20 55 0	2763	22 30 30	2743	24 6 13	2733	25 42 9	2723
	Pollux E.	82 16 51	2642	80 43 18	2634	79 9 36	2628	77 35 43	2620
	Mars E.	91 6 10	2987	89 35 41	2978	88 5 1	2969	86 34 10	2961
	Venus E.	114 40 1	3183	113 12 55	3143	111 45 38	3136	110 18 11	3127
4	Fomalhaut W.	70 1 52	2032	71 31 25	2018	73 1 15	2008	74 31 22	2001
	α Pegasi W.	55 40 2	2188	57 6 25	2183	58 33 18	2159	60 0 40	2117
	Jupiter W.	33 44 59	2677	35 22 10	2669	36 59 32	2660	38 37 6	2651
	Pollux E.	69 43 55	2783	68 9 5	2776	66 34 7	2769	64 58 59	2763
	Mars E.	78 57 8	2916	77 25 10	2908	75 53 1	2898	74 20 40	2891
	Venus E.	102 58 17	3082	101 29 45	3073	100 1 3	3065	98 32 10	3056
5	Fomalhaut W.	82 5 55	2632	83 37 33	2621	85 9 25	2611	86 41 30	2601
	α Pegasi W.	67 23 54	2019	68 53 43	2008	70 23 52	2007	71 54 21	2002
	Jupiter W.	46 47 57	2607	48 26 43	2597	50 5 42	2588	51 44 53	2580
	Pollux E.	57 1 15	2733	55 25 19	2729	53 49 16	2723	52 13 7	2718
	Mars E.	66 36 6	2845	65 2 36	2836	63 28 55	2827	61 55 2	2818
	Venus E.	91 4 58	3010	89 34 58	3001	88 4 46	2991	86 34 22	2982
	SUN E.	136 45 41	3006	135 15 36	2996	133 45 18	2986	132 14 47	2976
6	α Pegasi W.	79 31 23	2603	81 3 38	2601	82 36 9	2609	84 8 55	2606
	Jupiter W.	60 3 51	2636	61 44 16	2625	63 24 54	2616	65 5 45	2607
	α Arietis W.	35 59 38	2013	37 29 35	2002	39 0 24	2005	40 31 59	2001
	Pollux E.	44 11 0	2703	42 34 25	2702	40 57 48	2702	39 21 11	2704
	Mars E.	54 2 37	2771	52 27 31	2763	50 52 13	2763	49 16 43	2748
	Venus E.	78 59 27	2935	77 27 52	2924	75 56 4	2915	74 24 4	2905
	SUN E.	124 38 59	2924	123 7 11	2914	121 35 10	2904	120 2 56	2895
7	Jupiter W.	73 33 16	2480	75 15 26	2450	76 57 50	2441	78 40 27	2431
	α Arietis W.	48 19 51	2763	49 55 7	2741	51 30 53	2719	53 7 6	2700
	Pollux E.	31 19 22	2741	29 43 36	2766	28 8 11	2778	26 33 14	2806
	Mars E.	41 16 6	2696	39 39 21	2687	38 2 24	2678	36 25 14	2669
	Regulus E.	66 0 41	2499	64 19 27	2489	62 37 59	2480	60 56 18	2470
	Venus E.	66 40 54	2655	65 7 37	2645	63 34 7	2636	62 0 24	2624
	SUN E.	112 18 24	2643	110 44 50	2631	109 11 2	2620	107 37 0	2609
8	Jupiter W.	87 17 0	2382	89 1 0	2373	90 45 15	2362	92 29 44	2353
	α Arietis W.	61 14 37	2613	62 53 17	2596	64 32 18	2601	66 11 40	2596
	Aldebaran W.	27 43 49	2422	29 26 53	2412	31 10 10	2402	32 53 42	2392
	Regulus E.	52 24 26	2421	50 41 21	2411	48 58 2	2401	47 14 29	2392
	Venus E.	54 8 25	2772	52 33 20	2763	50 58 2	2753	49 22 30	2741
	SUN E.	99 43 23	2760	98 7 58	2748	96 32 19	2735	94 56 25	2726

GREENWICH MEAN TIME.											
LUNAR DISTANCES.											
Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Dist.	XVh.	P. L. of Dist.	XVIIIh.	P. L. of Dist.	XXh.	P. L. of Dist.	
1	Fomalhaut	W.	41° 40' 5"	3588	42° 59' 24"	3613	44° 19' 35"	3608	45° 40' 35"	3628	
	α Pegasi	W.	29 54 11	4618	30 57 47	4364	32 3 40	4230	33 11 38	4113	
	Pollux	E.	100 46 9	2939	99 14 40	2931	97 43 0	2928	96 11 10	2915	
	Mars	E.	108 58 7	3000	107 29 45	3002	106 1 13	3073	104 32 30	3065	
2	Fomalhaut	W.	52 35 45	3270	54 0 32	3243	55 25 50	3219	56 51 37	3198	
	α Pegasi	W.	39 16 34	3693	40 33 39	3672	41 51 50	3656	43 11 3	3611	
	Pollux	E.	88 29 22	2973	86 56 29	2966	85 23 26	2968	83 50 14	2950	
	Mars	E.	97 6 20	3023	95 36 34	3013	94 6 37	3004	92 36 29	2996	
3	Fomalhaut	W.	64 6 57	3097	65 35 10	3080	67 3 44	3064	68 32 38	3047	
	α Pegasi	W.	50 0 11	3307	51 24 14	3275	52 48 55	3245	54 14 11	3216	
	Jupiter	W.	27 18 18	2713	28 54 40	2704	30 31 14	2696	32 8 0	2686	
	Pollux	E.	76 1 41	2613	74 27 29	2606	72 53 7	2708	71 18 36	2791	
	Mars	E.	85 3 8	2902	83 31 55	2942	82 0 30	2934	80 28 55	2926	
	Venus	E.	108 50 34	3118	107 22 46	3109	105 54 47	3100	104 26 37	3091	
4	Fomalhaut	W.	76 1 46	2978	77 32 26	2966	79 3 21	2954	80 34 31	2943	
	α Pegasi	W.	61 28 29	3096	62 56 44	3075	64 25 24	3058	65 54 28	3039	
	Jupiter	W.	40 14 52	2642	41 52 50	2633	43 31 0	2624	45 9 23	2615	
	Pollux	E.	63 23 42	2756	61 48 17	2750	60 12 44	2744	58 37 4	2738	
	Mars	E.	72 48 8	2981	71 15 25	2972	69 42 30	2963	68 9 24	2954	
	Venus	E.	97 3 6	3047	95 33 51	3036	94 4 25	3028	92 34 47	3019	
5	Fomalhaut	W.	88 13 47	2992	89 46 16	2988	91 18 57	2974	92 51 49	2966	
	α Pegasi	W.	73 25 9	3067	74 56 16	3043	76 27 41	2998	77 59 24	2916	
	Jupiter	W.	53 24 16	2671	55 3 51	2669	56 43 38	2653	58 23 38	2644	
	Pollux	E.	50 36 51	2714	49 0 30	2710	47 24 4	2707	45 47 34	2706	
	Mars	E.	60 20 57	2906	58 46 40	2790	57 12 11	2790	55 37 30	2781	
	Venus	E.	85 3 47	2973	83 33 0	2963	82 2 1	2964	80 30 50	2944	
	SUN	E.	130 44 3	2965	129 13 6	2965	127 41 57	2945	126 10 35	2935	
6	α Pegasi	W.	85 41 55	2967	87 15 9	2947	88 48 36	2937	90 22 16	2928	
	Jupiter	W.	66 46 48	2497	68 28 5	2466	70 9 35	2478	71 51 19	2469	
	α Arietis	W.	42 4 17	2988	43 37 17	2989	45 10 54	2912	46 45 6	2787	
	Pollux	E.	37 44 36	2707	36 8 6	2719	34 31 41	2718	32 55 26	2727	
	Mars	E.	47 41 0	2734	46 5 5	2736	44 26 58	2716	42 52 38	2708	
	Venus	E.	72 51 52	2996	71 19 27	2985	69 46 49	2975	68 13 58	2965	
	SUN	E.	118 30 28	2983	116 57 47	2973	115 24 53	2963	113 51 45	2952	
7	Jupiter	W.	80 23 18	2423	82 6 22	2411	83 49 41	2402	85 33 13	2391	
	α Arietis	W.	54 43 47	2990	56 20 54	2992	57 58 25	2944	59 36 19	2927	
	Pollux	E.	24 58 54	2643	23 25 22	2691	21 52 51	2661	20 21 36	2626	
	Mars	E.	34 47 53	2990	33 10 20	2992	31 32 35	2943	29 54 39	2935	
	Regulus	E.	59 14 23	2461	57 32 15	2481	55 49 53	2441	54 7 16	2431	
	Venus	E.	60 26 27	2914	58 52 17	2908	57 17 53	2798	55 43 16	2782	
	SUN	E.	106 2 45	2796	104 28 15	2766	102 53 32	2778	101 18 34	2767	
8	Jupiter	W.	94 14 27	2342	95 59 25	2333	97 44 37	2323	99 30 4	2313	
	α Arietis	W.	67 51 21	2992	69 31 23	2998	71 11 43	2926	72 52 22	2912	
	Aldebaran	W.	34 37 29	2992	36 21 30	2972	38 5 45	2962	39 50 14	2953	
	Regulus	E.	45 30 43	2992	43 46 42	2971	42 2 26	2962	40 17 56	2953	
	Venus	E.	47 46 44	2730	46 10 44	2719	44 34 30	2709	42 58 2	2698	
	SUN	E.	93 20 18	2713	91 43 56	2703	90 7 20	2692	88 30 30	2682	

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Dist.	IIIh.	P. L. of Dist.	VIh.	P. L. of Dist.	IXh.	P. L. of Dist.
9	α Arietis W.	74° 33' 19"	2499	76° 14' 34"	2487	77° 56' 5"	2476	79° 37' 53"	2466
	Aldebaran W.	41 34 57	2343	43 19 55	2333	45 5 5	2323	46 50 33	2313
	Regulus E.	38 33 12	2342	36 48 14	2333	35 3 2	2323	33 17 36	2313
	Venus E.	41 21 20	2688	39 44 24	2678	38 7 15	2668	36 29 52	2658
	SUN E.	86 53 27	2672	85 16 9	2661	83 38 37	2652	82 0 51	2641
10	α Arietis W.	88 10 40	2413	89 53 56	2405	91 37 24	2396	93 21 5	2386
	Aldebaran W.	55 41 11	2266	57 28 0	2256	59 15 1	2249	61 2 15	2240
	SUN E.	73 48 40	2592	72 9 34	2583	70 30 16	2574	68 50 46	2566
11	α Arietis W.	102 2 4	2356	103 46 42	2351	105 31 27	2347	107 16 18	2345
	Aldebaran W.	70 1 33	2201	71 49 59	2196	73 38 34	2188	75 27 19	2181
	Pollux W.	27 28 2	2480	29 9 44	2443	30 52 18	2411	32 35 37	2384
	SUN E.	60 30 20	2526	58 49 43	2519	57 8 57	2513	55 28 1	2507
12	Aldebaran W.	84 33 22	2156	86 22 58	2151	88 12 39	2148	90 2 25	2144
	Pollux W.	41 20 37	2289	43 6 53	2276	44 53 28	2264	46 40 20	2254
	Mars W.	26 38 23	2346	28 23 15	2339	30 8 17	2332	31 53 30	2328
	SUN E.	47 1 30	2484	45 19 54	2461	43 38 14	2479	41 56 31	2477
13	Pollux W.	55 37 50	2221	57 25 46	2217	59 13 48	2214	61 1 55	2212
	Mars W.	40 41 5	2311	42 26 49	2310	44 12 34	2310	45 58 19	2309
	SUN E.	33 27 44	2482	31 46 5	2486	30 4 33	2492	28 23 8	2499
17	SUN W.	20 54 9	2805	22 28 31	2811	24 2 45	2818	25 36 50	2827
	α Aquilæ E.	74 39 15	2842	73 7 49	2868	71 36 56	2865	70 6 37	2823
	Fomalhaut E.	107 54 58	2896	106 18 12	2706	104 41 40	2716	102 5 22	2726
18	SUN W.	33 23 47	2890	34 56 19	2905	36 28 32	2920	38 0 25	2936
	α Aquilæ E.	62 44 22	2189	61 18 0	2228	59 52 24	2260	58 27 36	2312
	Fomalhaut E.	95 7 58	2795	93 33 24	2811	91 59 11	2828	90 25 19	2844
	α Pegasi E.	109 55 53	2876	108 23 4	2886	106 50 27	2897	105 18 4	2908
19	SUN W.	45 34 47	3018	47 4 37	3034	48 34 7	3062	50 3 16	3069
	α Aquilæ E.	51 36 57	2867	50 17 47	2830	48 59 45	2896	47 42 53	2765
	Fomalhaut E.	82 41 26	2933	81 9 49	2962	79 38 36	2971	78 7 47	2980
	α Pegasi E.	97 39 57	2973	96 9 10	2987	94 38 41	3002	93 8 31	3018
20	Jupiter E.	115 13 28	2611	113 34 48	2627	111 56 30	2644	110 18 35	2660
	SUN W.	57 23 56	3161	58 51 4	3166	60 17 54	3182	61 44 25	3197
	α Aquilæ E.	41 38 28	4210	40 30 11	4321	38 23 38	4443	37 18 55	4577
	Fomalhaut E.	70 39 55	3094	69 11 38	3116	67 43 47	3136	66 16 23	3161
21	α Pegasi E.	85 42 32	3098	84 14 20	3116	82 46 29	3133	81 18 58	3149
	Jupiter E.	102 14 17	2738	100 38 28	2763	99 2 58	2767	97 27 47	2782
	SUN W.	68 52 33	3270	70 17 20	3282	71 41 52	3296	73 6 8	3306
	Saturn W.	33 31 38	2948	35 2 56	2959	36 34 0	2969	38 4 51	2980
22	Antares W.	30 24 13	3119	31 51 59	3114	33 19 52	3109	34 47 51	3107
	Fomalhaut E.	59 6 21	3261	57 41 47	3307	56 17 44	3334	54 54 12	3362
	α Pegasi E.	74 6 41	3238	72 41 17	3268	71 16 16	3276	69 51 37	3296
	Jupiter E.	89 36 30	2649	88 3 6	2662	86 29 58	2674	84 57 6	2686
22	SUN W.	80 3 59	3365	81 26 55	3376	82 49 39	3386	84 12 13	3394
	Saturn W.	45 35 55	3028	47 5 33	3037	48 35 0	3045	50 4 17	3053
	Antares W.	42 8 8	3108	43 36 8	3110	45 4 5	3112	47 32 0	3114

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Dist.	XVh.	P. L. of Dist.	XVIIIh.	P. L. of Dist.	XXh.	P. L. of Dist.
9	α Arietis W.	81° 19' 56"	2453	83° 2' 15"	2443	84° 44' 49"	2433	86° 27' 38"	2423
	Aldebaran W.	48 36 13	2304	50 22 6	2295	52 8 14	2285	53 54 35	2276
	Regulus E.	31 31 55	2304	29 46 1	2294	27 59 53	2285	26 13 31	2276
	Venus E.	34 52 16	2648	33 14 26	2638	31 36 23	2628	29 58 6	2618
	SUN E.	80 22 52	2631	78 44 39	2621	77 6 13	2611	75 27 33	2601
10	α Arietis W.	95 4 57	2381	96 48 59	2374	98 33 12	2367	100 17 34	2361
	Aldebaran W.	62 49 43	2233	64 37 23	2225	66 25 14	2216	68 13 17	2206
	SUN E.	67 11 3	2567	65 31 9	2549	63 51 3	2541	62 10 47	2533
11	α Arietis W.	109 1 12	2343	110 46 11	2340	112 31 13	2339	114 16 15	2339
	Aldebaran W.	77 16 15	2175	79 5 20	2170	80 54 33	2166	82 43 53	2169
	Pollux W.	34 19 35	2360	36 4 8	2339	37 49 11	2330	39 34 42	2303
	SUN E.	53 46 57	2601	52 5 45	2496	50 24 26	2492	48 43 1	2487
12	Aldebaran W.	91 52 19	2141	93 42 16	2139	95 32 15	2137	97 22 17	2135
	Pollux W.	48 27 27	2246	50 14 47	2237	52 2 19	2231	53 50 0	2225
	Mars W.	33 38 49	2323	35 24 15	2319	37 9 47	2316	38 55 24	2313
	SUN E.	40 14 45	2477	38 32 59	2477	36 51 12	2477	35 9 27	2476
13	Pollux W.	62 50 5	2211	64 38 16	2210	66 26 28	2211	68 14 39	2212
	Mars W.	47 44 5	2310	49 29 50	2312	51 15 32	2313	53 1 12	2315
	SUN E.	26 41 53	2508	25 0 51	2520	23 20 5	2533	21 39 37	2546
17	SUN W.	27 10 44	2337	28 44 23	2343	30 17 48	2363	31 50 56	2375
	α Aquilæ E.	68 36 53	3063	67 7 46	3036	65 39 18	3118	64 11 30	3151
	Fomalhaut E.	101 29 19	2740	99 53 32	2753	98 18 2	2766	96 42 50	2781
18	SUN W.	39 31 58	2902	41 3 11	2909	42 34 4	2966	44 4 35	3001
	α Aquilæ E.	57 3 38	3358	55 40 33	3406	54 18 23	3466	52 57 10	3510
	Fomalhaut E.	88 51 48	2861	87 18 39	2876	85 45 52	2896	84 13 27	2914
	α Pegasi E.	103 45 55	2920	102 14 1	2932	100 42 23	2946	99 11 1	2959
19	SUN W.	51 32 4	3085	53 0 32	3101	54 28 40	3118	55 56 28	3134
	α Aquilæ E.	46 27 14	3340	45 12 53	3321	43 59 55	3410	42 48 25	3466
	Fomalhaut E.	76 37 22	3010	75 7 22	3030	73 37 47	3063	72 8 38	3073
	α Pegasi E.	91 38 40	3033	90 9 8	3049	88 39 56	3065	87 11 4	3082
	Jupiter E.	108 41 1	2675	107 3 49	2692	105 26 58	2707	103 50 27	2722
20	SUN W.	63 10 37	3212	64 36 32	3227	66 2 9	3242	67 27 30	3255
	α Aquilæ E.	37 16 10	4727	36 15 33	4692	35 17 12	4677	34 21 17	4684
	Fomalhaut E.	64 49 27	3183	63 22 58	3207	61 56 57	3231	60 31 24	3256
	α Pegasi E.	79 51 48	3167	78 24 59	3185	76 58 32	3203	75 32 26	3220
	Jupiter E.	95 52 56	2796	94 18 23	2810	92 44 8	2823	91 10 10	2837
21	SUN W.	74 30 10	3321	75 53 58	3333	77 17 31	3345	78 40 52	3355
	Saturn W.	39 35 29	2990	41 5 54	3000	42 36 7	3010	44 6 7	3020
	Antares W.	36 15 52	3105	37 43 56	3104	39 12 1	3106	40 40 5	3106
	Fomalhaut E.	53 31 12	3391	52 8 45	3422	50 46 53	3463	49 25 36	3486
	α Pegasi E.	68 27 19	3314	67 3 24	3333	65 39 51	3354	64 16 42	3374
	Jupiter E.	83 24 29	2898	81 52 7	2908	80 19 58	2918	78 48 2	2929
22	SUN W.	85 34 36	3402	86 56 50	3411	88 18 54	3418	90 40 50	3425
	Saturn W.	51 33 24	3080	53 2 22	3068	54 31 11	3074	55 59 52	3081
	Antares W.	47 59 52	3117	49 27 41	3120	50 55 26	3122	52 23 8	3125

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Dist.	IIIh.	P. L. of Dist.	VIh.	P. L. of Dist.	IXh.	P. L. of Dist.
22	Fomalhaut E.	48° 4' 56"	3431	46° 44' 55"	3456	45° 25' 35"	3496	44° 6' 58"	3499
	α Pegasi E.	62 53 56	3396	61 31 34	3416	60 9 36	3436	58 48 3	3461
	Jupiter E.	77 16 20	2939	75 44 50	2947	74 13 31	2957	72 42 24	2965
23	SUN W.	91 2 38	3432	92 24 18	3438	93 45 51	3444	95 7 18	3448
	Saturn W.	57 58 25	3086	59 26 52	3091	60 55 12	3096	62 23 26	3101
	Antares W.	53 50 47	3129	55 18 22	3130	56 45 55	3132	58 13 26	3134
	α Pegasi E.	52 6 57	3088	50 48 10	3016	49 29 55	3050	48 12 15	3083
	Jupiter E.	65 9 12	3000	63 38 59	3006	62 8 53	3010	60 38 53	3015
24	SUN W.	101 53 21	3403	103 14 22	3409	104 35 22	3470	105 56 20	3471
	Saturn W.	69 13 29	3114	70 41 21	3116	72 9 11	3117	73 37 0	3119
	Antares W.	65 30 33	3129	66 57 55	3128	68 25 18	3129	69 52 41	3128
	Jupiter E.	53 10 8	3031	51 40 34	3033	50 11 2	3034	48 41 32	3035
	α Arietis E.	82 31 8	3217	81 5 19	3220	79 39 34	3223	78 13 51	3226
25	SUN W.	112 41 3	3402	114 2 2	3407	115 23 3	3464	116 44 7	3462
	Saturn W.	80 56 3	3114	82 23 56	3111	83 51 52	3109	85 19 50	3107
	Antares W.	77 9 56	3129	78 37 30	3127	80 5 7	3124	81 32 48	3120
	Jupiter E.	41 14 7	3033	39 44 35	3031	38 15 1	3030	36 45 25	3027
	α Arietis E.	71 5 53	3233	69 40 23	3234	68 14 53	3236	66 49 26	3236
26	SUN W.	123 30 21	3442	124 51 49	3436	126 13 24	3430	127 35 4	3428
	Saturn W.	92 40 45	3065	94 9 13	3090	95 37 47	3074	97 6 28	3068
	α Aquilæ W.	46 38 38	4108	47 48 37	4047	48 59 30	3997	50 11 13	3948
	α Arietis E.	59 42 21	3341	58 17 0	3343	56 51 40	3343	55 26 22	3345
	Aldebaran E.	90 57 14	3089	89 27 50	3094	87 58 18	3026	86 28 40	3023
27	Saturn W.	104 31 49	3094	106 1 20	3026	107 31 1	3019	109 0 52	3009
	α Aquilæ W.	56 20 51	3761	57 36 44	3719	58 53 11	3697	60 10 12	3657
	α Arietis E.	48 20 34	3292	46 55 38	3296	45 30 49	3276	44 6 9	3264
	Aldebaran E.	78 58 28	3097	77 27 59	3079	75 57 20	3071	74 26 30	3062
28	α Aquilæ W.	66 42 49	3077	68 2 43	3008	69 23 2	3488	70 43 45	3488
	Fomalhaut W.	33 26 11	3097	34 38 23	3079	35 52 4	3199	37 7 7	3127
	Aldebaran E.	66 49 37	3016	65 17 40	3007	63 45 30	3097	62 13 7	3087
29	α Aquilæ W.	77 32 53	3309	78 55 45	3208	80 18 55	3238	81 42 22	3224
	Fomalhaut W.	43 39 35	3447	45 0 58	3404	46 23 10	3364	47 46 8	3327
	α Pegasi W.	31 32 58	4261	32 40 8	4161	33 49 21	4034	35 0 27	3990
	Aldebaran E.	54 28 0	3036	52 54 19	3026	51 20 24	3016	49 46 15	3004
	Pollux E.	98 28 5	3094	96 55 39	3093	95 22 58	3072	93 50 3	3061
30	Fomalhaut W.	54 50 58	3170	56 17 43	3143	57 45 0	3119	59 12 47	3096
	α Pegasi W.	41 19 7	3054	42 38 42	3468	43 59 20	3436	45 20 56	3387
	Jupiter W.	20 20 41	2734	21 56 36	2723	23 32 47	2710	25 9 14	2697
	Aldebaran E.	41 51 58	3760	40 16 24	3769	38 40 36	3729	37 4 34	3718
	Pollux E.	86 1 56	3097	84 27 37	3798	82 53 4	3796	81 18 18	3776
	Mars E.	109 14 55	3023	107 43 4	3012	106 11 0	3001	104 38 42	3001
31	Fomalhaut W.	66 38 27	3096	68 8 49	3076	69 39 33	3068	71 10 38	3043
	α Pegasi W.	52 21 41	3190	53 48 2	3169	55 15 0	3129	56 42 34	3101
	Jupiter W.	33 15 28	2640	34 53 28	2630	36 31 42	2620	38 10 10	2610
	Pollux E.	73 21 10	3737	71 45 6	3716	70 8 51	3710	68 32 23	3701
	Mars E.	96 53 36	3034	95 19 52	2823	93 45 54	2812	92 11 42	2801

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Dist.	XVh.	P. L. of Dist.	XVIIIh.	P. L. of Dist.	XXh.	P. L. of Dist.
22	Fomalhaut E.	42° 49' 5"	3084	41° 32' 1"	3138	40° 15' 49"	3198	39° 0' 32"	3242
	α Pegasi E.	57 26 55	3485	56 6 14	3509	54 46 0	3535	53 26 14	3561
	Jupiter E.	71 11 27	2973	69 40 40	2990	68 10 2	2997	66 39 33	2998
23	Sun W.	96 28 40	3454	97 49 56	3497	99 11 8	3461	101 32 16	3464
	Saturn W.	63 21 34	3104	64 49 39	3108	66 17 39	3110	67 45 36	3114
	Antares W.	59 40 55	3136	61 8 21	3137	62 35 46	3138	64 3 10	3138
	α Pegasi E.	46 55 10	3719	45 38 43	3707	44 22 56	3707	43 7 51	3840
	Jupiter E.	59 8 59	3019	57 39 10	3023	56 9 25	3023	54 39 45	3029
24	Sun W.	107 17 16	3471	108 38 13	3471	109 59 9	3471	111 20 5	3479
	Saturn W.	75 4 47	3118	77 32 35	3116	79 0 24	3116	79 28 13	3116
	Antares W.	71 20 5	3187	72 47 30	3185	74 14 57	3184	75 42 25	3183
	Jupiter E.	47 12 3	3036	45 42 34	3036	44 13 5	3035	42 43 36	3034
	α Arietis E.	76 48 12	3236	75 22 34	3228	73 56 58	3230	72 31 25	3231
25	Sun W.	118 5 14	3459	119 26 24	3455	120 47 39	3451	122 8 57	3448
	Saturn W.	86 47 51	3109	88 15 57	3099	89 44 8	3099	91 12 24	3091
	Antares W.	83 0 33	3116	84 28 23	3113	86 56 18	3109	88 24 18	3104
	Jupiter E.	35 15 46	3025	33 46 4	3021	32 16 17	3018	30 46 26	3014
	α Arietis E.	65 23 59	3236	63 58 33	3237	62 33 8	3238	61 7 44	3239
26	Sun W.	128 56 51	3491	130 18 44	3410	131 40 44	3408	133 2 51	3408
	Saturn W.	98 35 15	3068	100 4 11	3066	101 33 15	3048	103 2 28	3042
	α Aquilæ W.	51 23 44	3906	52 36 59	3903	53 50 56	3923	55 5 34	3797
	α Arietis E.	54 1 6	3347	52 35 53	3260	51 10 42	3253	49 45 36	3267
	Aldebaran E.	84 58 54	3015	83 29 1	3009	81 58 59	3001	80 28 48	2994
27	Saturn W.	110 30 54	3000	112 1 7	3090	113 31 32	3090	115 2 11	2990
	α Aquilæ W.	61 27 45	3929	62 45 48	3901	64 4 21	3979	65 23 22	3592
	α Arietis E.	42 41 39	3295	41 17 22	3307	39 53 19	3321	38 29 32	3338
	Aldebaran E.	72 55 30	2965	71 24 18	2944	69 52 56	2935	68 21 22	2926
28	α Aquilæ W.	72 4 51	3443	73 26 20	3423	74 48 10	3405	76 10 21	3386
	Fomalhaut W.	38 23 26	3061	39 40 55	3000	40 59 29	3046	42 19 4	3494
	Aldebaran E.	60 40 32	2977	59 7 44	2997	57 34 43	2957	56 1 28	2945
29	α Aquilæ W.	83 6 6	3310	84 30 6	3296	85 54 22	3293	87 18 53	3270
	Fomalhaut W.	49 9 48	3290	50 34 11	3268	51 59 12	3228	53 24 48	3190
	α Pegasi W.	36 13 16	3637	37 27 40	3704	38 43 30	3677	40 0 41	3608
	Aldebaran E.	48 11 52	2798	46 37 15	2792	45 2 23	2777	43 27 17	2760
	Pollux E.	92 16 53	2950	90 43 30	2939	89 9 53	2928	87 36 2	2918
30	Fomalhaut W.	60 41 2	3073	62 9 45	3062	63 38 54	3031	65 8 28	3012
	α Pegasi W.	46 43 27	3343	48 6 50	3299	49 31 3	3260	50 56 1	3225
	Jupiter W.	26 45 58	2985	28 22 58	2974	30 0 13	2953	31 37 43	2952
	Aldebaran E.	35 28 17	2707	33 51 46	2697	32 15 2	2697	30 38 3	2676
	Pollux E.	79 43 18	2706	78 8 6	2706	76 32 40	2746	74 57 1	2738
	Mars E.	103 6 11	2978	101 33 24	2966	100 0 22	2955	98 27 6	2945
31	Fomalhaut W.	72 42 2	2927	74 13 47	2912	75 45 50	2909	77 18 11	2905
	α Pegasi W.	58 10 42	3076	59 39 22	3061	61 8 32	3026	62 38 10	3006
	Jupiter W.	39 48 52	2699	41 27 48	2690	43 6 57	2680	44 46 19	2670
	Pollux E.	66 55 44	2692	65 18 54	2684	63 41 54	2677	62 4 43	2670
	Mars E.	90 37 16	2791	89 2 36	2781	87 27 43	2771	85 52 37	2760

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S						Sideral Time of the Semi-diameter passing the Meridian.	Equation of Time, to be subtracted from Apparent Time.	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Semi-diameter.				
<i>Sun.</i>	1	^h 14 ^m 27 ^s 50.89	9.814	S. 14° 37' 16.9"	47.77	16 10.05	67.01	^m 16 18.40	0.042	
<i>Mon.</i>	2	14 31 46.84	9.848	14 56 16.5	47.17	16 10.29	67.13	16 19.00	0.008	
<i>Tues.</i>	3	14 35 43.61	9.883	15 15 1.4	46.55	16 10.53	67.24	16 18.79	0.026	
<i>Wed.</i>	4	14 39 41.20	9.918	15 33 31.3	45.92	16 10.77	67.36	16 17.75	0.061	
<i>Thur.</i>	5	14 43 39.64	9.953	15 51 46.0	45.27	16 11.00	67.48	16 15.87	0.096	
<i>Fri.</i>	6	14 47 38.95	9.989	16 9 44.9	44.61	16 11.23	67.60	16 13.13	0.132	
<i>Sat.</i>	7	14 51 39.11	10.025	16 27 27.7	43.93	16 11.46	67.72	16 9.54	0.168	
<i>Sun.</i>	8	14 55 40.13	10.061	16 44 53.9	43.23	16 11.68	67.84	16 5.09	0.204	
<i>Mon.</i>	9	14 59 42.02	10.097	17 2 3.2	42.51	16 11.90	67.96	15 59.77	0.240	
<i>Tues.</i>	10	15 3 44.77	10.133	17 18 55.1	41.78	16 12.12	68.08	15 53.58	0.276	
<i>Wed.</i>	11	15 7 48.39	10.169	17 35 29.1	41.03	16 12.34	68.20	15 46.53	0.312	
<i>Thur.</i>	12	15 11 52.88	10.205	17 51' 44.9	40.27	16 12.56	68.32	15 38.62	0.348	
<i>Fri.</i>	13	15 15 58.23	10.241	18 7 42.3	39.48	16 12.77	68.44	15 29.85	0.384	
<i>Sat.</i>	14	15 20 4.43	10.276	18 23 20.8	38.68	16 12.98	68.55	15 20.23	0.419	
<i>Sun.</i>	15	15 24 11.49	10.311	18 38 39.7	37.86	16 13.19	68.67	15 9.76	0.454	
<i>Mon.</i>	16	15 28 19.38	10.345	18 53 38.6	37.02	16 13.40	68.78	14 58.45	0.489	
<i>Tues.</i>	17	15 32 28.11	10.379	19 8 17.4	36.17	16 13.61	68.90	14 46.31	0.523	
<i>Wed.</i>	18	15 36 37.66	10.413	19 22 35.6	35.31	16 13.81	69.01	14 33.34	0.557	
<i>Thur.</i>	19	15 40 48.04	10.447	19 36 32.9	34.43	16 14.01	69.13	14 19.57	0.590	
<i>Fri.</i>	20	15 44 59.21	10.480	19 50 8.8	33.53	16 14.21	69.24	14 5.00	0.623	
<i>Sat.</i>	21	15 49 11.16	10.513	20 3 23.0	32.61	16 14.41	69.35	13 49.64	0.656	
<i>Sun.</i>	22	15 53 23.88	10.545	20 16 14.9	31.68	16 14.60	69.46	13 33.51	0.688	
<i>Mon.</i>	23	15 57 37.38	10.577	20 28 44.3	30.74	16 14.79	69.57	13 16.61	0.720	
<i>Tues.</i>	24	16 1 51.63	10.608	20 40 50.8	29.78	16 14.97	69.68	12 58.97	0.751	
<i>Wed.</i>	25	16 6 6.62	10.639	20 52 34.3	28.81	16 15.15	69.78	12 40.59	0.782	
<i>Thur.</i>	26	16 10 22.35	10.669	21 3 54.4	27.83	16 15.32	69.88	12 21.47	0.812	
<i>Fri.</i>	27	16 16 38.81	10.698	21 14 50.7	26.83	16 15.49	69.98	12 1.63	0.841	
<i>Sat.</i>	28	16 18 55.97	10.727	21 25 22.7	25.81	16 15.66	70.08	11 41.08	0.870	
<i>Sun.</i>	29	16 23 13.81	10.755	21 35 30.2	24.78	16 15.81	70.18	11 19.85	0.898	
<i>Mon.</i>	30	16 27 32.32	10.783	21 45 12.9	23.74	16 15.96	70.27	10 57.96	0.926	
<i>Tues.</i>	31	16 31 51.48	10.810	S. 21 54 30.6	22.70	16 16.11	70.36	10 35.42	0.953	

NOTE. — Mean Time of the Semidiameter passing may be found by subtracting 0s.19 from the Sideral Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be added to Mean Time.	Diff. for 1 hour.	Sidereal Time.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.			
Sun.	1	^h 14 ^m 27 ^s 53.56	9.814	S. 14° 37' 29.9"	47.77	^m 16 ^s 18.41	0.042	^h 14 ^m 44 ^s 11.97
Mon.	2	14 31 49.52	9.848	14 56 29.3	47.17	16 19.00	0.008	14 48 8.52
Tues.	3	14 35 46.30	9.883	15 15 14.0	46.55	16 18.78	0.026	14 52 5.08
Wed.	4	14 39 43.90	9.918	15 33 43.8	45.92	16 17.73	0.061	14 56 1.63
Thur.	5	14 43 42.34	9.953	15 51 58.3	45.27	16 15.85	0.096	14 59 58.19
Fri.	6	14 47 41.65	9.989	16 9 57.0	44.61	16 13.09	0.132	15 3 54.74
Sat.	7	14 51 41.81	10.025	16 27 39.5	43.93	16 9.49	0.168	15 7 51.30
Sun.	8	14 55 42.82	10.061	16 45 5.5	43.23	16 5.03	0.204	15 11 47.85
Mon.	9	14 59 44.70	10.097	17 2 14.5	42.51	15 59.71	0.240	15 15 44.41
Tues.	10	15 3 47.45	10.133	17 19 6.1	41.78	15 53.51	0.276	15 19 40.96
Wed.	11	15 7 51.06	10.169	17 35 39.8	41.03	15 46.45	0.312	15 23 37.51
Thur.	12	15 11 55.54	10.205	17 51 55.4	40.27	15 38.53	0.348	15 27 34.07
Fri.	13	15 16 0.87	10.241	18 7 52.5	39.48	15 29.76	0.384	15 31 30.63
Sat.	14	15 20 7.06	10.276	18 23 30.7	38.68	15 20.12	0.419	15 35 27.18
Sun.	15	15 24 14.10	10.311	18 38 49.2	37.86	15 9.64	0.454	15 39 23.74
Mon.	16	15 28 21.97	10.345	18 53 47.8	37.02	14 58.32	0.489	15 43 20.29
Tues.	17	15 32 30.67	10.379	19 8 26.3	36.17	14 46.18	0.523	15 47 16.85
Wed.	18	15 36 40.19	10.413	19 22 44.2	35.31	14 33.21	0.557	15 51 13.40
Thur.	19	15 40 50.53	10.447	19 36 41.2	34.43	14 19.43	0.590	15 55 9.96
Fri.	20	15 45 1.66	10.480	19 50 16.7	33.53	14 4.85	0.623	15 59 6.51
Sat.	21	15 49 13.58	10.513	20 3 30.5	32.61	13 49.49	0.656	16 3 3.07
Sun.	22	15 53 26.27	10.545	20 16 22.0	31.68	13 33.36	0.688	16 6 59.63
Mon.	23	15 57 39.73	10.577	20 28 51.1	30.74	13 16.45	0.720	16 10 56.18
Tues.	24	16 1 53.93	10.608	20 40 57.3	29.78	12 58.81	0.751	16 14 52.74
Wed.	25	16 6 8.87	10.639	20 52 40.4	28.81	12 40.42	0.782	16 18 49.29
Thur.	26	16 10 24.55	10.669	21 4 0.1	27.83	12 21.30	0.812	16 22 45.85
Fri.	27	16 14 40.95	10.698	21 14 56.0	26.83	12 1.46	0.841	16 26 42.41
Sat.	28	16 18 58.05	10.727	21 25 27.7	25.81	11 40.91	0.870	16 30 38.96
Sun.	29	16 23 15.83	10.755	21 35 34.9	24.78	11 19.69	0.898	16 34 35.52
Mon.	30	16 27 34.29	10.783	21 45 17.2	23.74	10 57.79	0.926	16 38 32.08
Tues.	31	16 31 53.39	10.810	S. 21 54 34.6	22.70	10 35.24	0.953	16 42 28.63

NOTE. — The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

AT GREENWICH MEAN NOON.

AT GREENWICH MEAN NOON.									
Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal Oh.	
		True LONGITUDE.		Diff. for 1 hour.	LATITUDE.				
		λ	λ'						
1	306	219° 22' 43.4	22° 13.4	150.24	—0.40	9.9963827	45.7	9 14 16.98	
2	307	220 22 50.2	22 20.1	150.32	0.37	.9962735	45.1	9 10 21.07	
3	308	221 22 59.0	22 28.8	150.40	0.31	.9961660	44.4	9 6 25.16	
4	309	222 23 9.8	22 29.5	150.48	0.23	.9960601	43.8	9 2 29.25	
5	310	223 23 22.6	22 52.2	150.57	0.14	.9959556	43.2	8 58 33.34	
6	311	224 23 37.6	23 7.0	150.66	—0.02	.9958526	42.6	8 54 37.43	
7	312	225 23 54.6	23 23.9	150.75	+0.11	.9957509	42.1	8 50 41.53	
8	313	226 24 13.5	23 42.7	150.83	0.24	.9956504	41.6	8 46 45.63	
9	314	227 24 34.4	24 3.5	150.91	0.37	.9955511	41.1	8 42 49.72	
10	315	228 24 57.3	24 26.2	150.99	0.48	.9954529	40.7	8 38 53.81	
11	316	229 25 22.0	24 50.8	151.07	0.57	.9953557	40.3	8 34 57.89	
12	317	230 25 48.6	25 17.3	151.14	0.65	.9952594	39.9	8 31 1.96	
13	318	231 26 17.0	25 45.6	151.21	0.70	.9951640	39.5	8 27 6.07	
14	319	232 26 47.1	26 15.5	151.28	0.72	.9950695	39.2	8 23 10.16	
15	320	233 27 18.9	26 47.1	151.35	0.71	.9949758	38.9	8 19 14.25	
16	321	234 27 52.2	27 20.3	151.41	0.66	.9948830	38.5	8 15 18.34	
17	322	235 28 27.0	27 55.0	151.47	0.59	.9947911	38.1	8 11 22.43	
18	323	236 29 3.0	28 30.9	151.52	0.50	.9947002	37.6	8 7 26.52	
19	324	237 29 40.2	29 7.9	151.57	0.38	.9946104	37.1	8 3 30.62	
20	325	238 30 18.6	29 46.1	151.62	0.25	.9945220	36.9	7 59 34.71	
21	326	239 30 58.1	30 25.5	151.67	+0.12	.9944351	35.5	7 55 38.80	
22	327	240 31 38.8	31 6.1	151.72	—0.01	.9943497	35.2	7 51 42.89	
23	328	241 32 20.7	31 47.9	151.77	0.14	.9942661	34.5	7 47 46.97	
24	329	242 33 3.7	32 30.7	151.81	0.27	.9941843	33.7	7 43 51.06	
25	330	243 33 47.7	33 14.5	151.85	0.37	.9941044	32.8	7 39 55.15	
26	331	244 34 32.7	33 59.4	151.89	0.43	.9940267	31.8	7 35 59.24	
27	332	245 35 18.8	34 45.4	151.93	0.47	.9939513	30.9	7 32 3.33	
28	333	246 36 6.0	35 32.4	151.98	0.48	.9938788	29.9	7 28 7.42	
29	334	247 36 54.4	36 20.6	152.03	0.47	.9938077	28.9	7 24 11.51	
30	335	248 37 43.9	37 9.9	152.08	0.43	.9937397	27.9	7 20 15.60	
31	336	249 38 34.5	38 0.4	152.13	—0.36	9.9936741	26.9	7 16 19.69	

NOTE: λ corresponds to the true equinox of the date, λ' to the mean equinox of January 04.

NOTE: λ corresponds to the true equinox of the date, λ' to the mean equinox of January 0d.

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMI- DIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.			AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.			Diff. for 1 hour.	
							h	m		
1	15 34.1	15 38.2	57 1.6	+1.28	57 16.8	+1.23	13	6.3	2.15	16.5
2	15 42.2	15 45.9	57 31.3	1.18	57 45.0	1.11	13	59.3	2.25	17.5
3	15 49.4	15 52.7	57 57.9	1.04	58 10.0	0.97	14	54.6	2.33	18.5
4	15 55.8	15 58.6	58 21.2	0.89	58 31.4	0.82	15	51.3	2.37	19.5
5	16 1.1	16 3.5	58 40.9	0.75	58 49.4	0.67	16	48.4	2.37	20.5
6	16 5.6	16 7.4	58 57.1	0.60	59 3.9	0.52	17	44.9	2.33	21.5
7	16 9.0	16 10.3	59 9.7	0.44	59 14.5	0.35	18	40.1	2.27	22.5
8	16 11.3	16 11.9	59 18.2	0.25	59 20.6	+0.14	19	33.7	2.21	23.5
9	16 12.2	16 12.1	59 21.7	+0.02	59 21.2	-0.11	20	26.1	2.16	24.5
10	16 11.5	16 10.4	59 19.0	-0.26	59 14.9	0.42	21	17.5	2.14	25.5
11	16 8.8	16 6.6	59 8.9	0.58	59 0.9	0.75	22	8.6	2.14	26.5
12	16 3.9	16 0.6	58 50.8	0.92	58 38.8	1.08	23	0.0	2.15	27.5
13	15 56.8	15 52.5	58 24.8	1.24	58 9.1	1.37	23	51.9	2.17	28.5
14	15 47.8	15 42.8	57 51.8	1.49	57 33.3	1.58	δ			0.1
15	15 37.5	15 32.0	57 13.9	1.64	56 54.0	1.67	0	44.2	2.18	1.1
16	15 26.6	15 21.1	56 33.9	1.67	56 13.9	1.64	1	36.6	2.17	2.1
17	15 15.8	15 10.8	55 54.5	1.58	55 36.0	1.49	2	28.6	2.14	3.1
18	15 6.1	15 1.8	55 18.8	1.37	55 8.1	1.23	3	19.3	2.08	4.1
19	14 58.1	14 54.9	54 49.3	1.06	54 37.6	0.88	4	8.5	2.01	5.1
20	14 52.3	14 50.4	54 28.1	0.69	54 21.1	0.48	4	55.7	1.93	6.1
21	14 49.2	14 48.7	54 16.6	-0.26	54 14.7	-0.04	5	41.2	1.86	7.1
22	14 48.9	14 49.8	54 15.5	+0.17	54 18.9	+0.39	6	25.2	1.82	8.1
23	14 51.4	14 53.8	54 24.9	0.60	54 33.4	0.81	7	8.4	1.79	9.1
24	14 56.7	15 0.3	54 44.3	1.00	54 57.4	1.18	7	51.3	1.80	10.1
25	15 4.4	15 9.1	55 12.6	1.34	55 29.6	1.48	8	34.8	1.84	11.1
26	15 14.1	15 19.4	55 48.1	1.59	56 7.7	1.67	9	19.7	1.91	12.1
27	15 25.0	15 30.7	56 28.2	1.72	56 49.1	1.74	10	6.8	2.02	13.1
28	15 36.4	15 42.0	57 10.1	1.73	57 30.6	1.68	10	56.6	2.14	14.1
29	15 47.4	15 52.5	57 50.4	1.60	58 9.0	1.49	11	49.5	2.27	15.1
30	15 57.1	16 1.3	58 26.1	1.35	58 41.4	1.20	12	45.3	2.37	16.1
31	16 4.9	16 8.0	58 54.8	+1.02	59 5.9	+0.83	13	43.3	2.43	17.1

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SUNDAY 1.					TUESDAY 3.				
0	3 23 32.77	2.1922	N.13 25 23.8	8.296	0	5 13 22.10	2.3760	N.18 30 53.1	4.076
1	3 25 44.43	2.1963	13 33 39.6	8.330	1	5 15 44.75	2.3791	18 34 54.4	2.966
2	3 27 56.33	2.2004	13 41 51.5	8.164	2	5 18 7.59	2.3821	18 38 49.1	2.666
3	3 30 8.47	2.2045	13 49 59.3	8.097	3	5 20 30.61	2.3851	18 42 37.2	2.746
4	3 32 20.87	2.2086	13 58 3.2	8.029	4	5 22 53.81	2.3881	18 46 18.6	2.635
5	3 34 33.51	2.2127	14 6 2.9	7.960	5	5 25 17.18	2.3910	18 49 53.3	2.523
6	3 36 46.40	2.2168	14 13 58.4	7.890	6	5 27 40.73	2.3938	18 53 21.4	2.410
7	3 38 59.53	2.2209	14 21 49.6	7.818	7	5 30 4.44	2.3966	18 56 42.6	2.297
8	3 41 12.91	2.2250	14 29 36.6	7.746	8	5 32 28.32	2.3995	18 59 57.1	2.184
9	3 43 26.53	2.2291	14 37 19.2	7.673	9	5 34 52.36	2.4023	19 3 4.7	2.070
10	3 45 40.41	2.2332	14 44 57.4	7.599	10	5 37 16.56	2.4051	19 6 5.4	2.956
11	3 47 54.53	2.2374	14 52 31.0	7.523	11	5 39 40.92	2.4079	19 8 59.2	2.839
12	3 50 8.89	2.2415	15 0 0.1	7.447	12	5 42 5.43	2.4097	19 11 46.1	2.723
13	3 52 23.50	2.2456	15 7 24.6	7.370	13	5 44 30.09	2.4125	19 14 26.0	2.606
14	3 54 38.35	2.2497	15 14 44.4	7.291	14	5 46 54.89	2.4153	19 16 58.9	2.489
15	3 56 53.45	2.2538	15 21 59.5	7.212	15	5 49 19.83	2.4181	19 19 24.7	2.371
16	3 59 8.80	2.2579	15 29 9.9	7.133	16	5 51 44.91	2.4191	19 21 43.4	2.253
17	4 1 24.39	2.2619	15 36 15.4	7.051	17	5 54 10.12	2.4218	19 23 55.0	2.134
18	4 3 40.22	2.2659	15 43 16.0	6.968	18	5 56 35.47	2.4234	19 25 59.5	2.015
19	4 5 56.30	2.2699	15 50 11.6	6.885	19	5 59 0.94	2.4255	19 27 56.9	1.896
20	4 8 12.02	2.2739	15 57 2.2	6.801	20	6 1 26.53	2.4276	19 29 47.1	1.776
21	4 10 29.17	2.2780	16 3 47.7	6.716	21	6 3 52.24	2.4296	19 31 30.0	1.656
22	4 12 45.97	2.2819	16 10 28.0	6.632	22	6 6 18.07	2.4313	19 33 5.7	1.535
23	4 15 3.01	2.2859	N.16 17 3.2	6.542	23	6 8 44.00	2.4333	N.19 34 34.2	1.414
MONDAY 2.					WEDNESDAY 4.				
0	4 17 20.29	2.2899	N.16 23 33.0	6.454	0	6 11 10.05	2.4349	N.19 35 55.4	1.292
1	4 19 37.80	2.2938	16 29 57.6	6.368	1	6 13 36.19	2.4368	19 37 9.3	1.170
2	4 21 55.55	2.2977	16 36 16.8	6.275	2	6 16 2.43	2.4381	19 38 15.8	1.047
3	4 24 13.53	2.3016	16 42 30.6	6.184	3	6 18 28.77	2.4397	19 39 15.0	0.925
4	4 26 31.75	2.3055	16 48 38.9	6.092	4	6 20 55.20	2.4412	19 40 6.8	0.802
5	4 28 50.19	2.3093	16 54 41.7	6.000	5	6 23 21.71	2.4426	19 40 51.2	0.679
6	4 31 8.86	2.3131	17 0 38.9	5.908	6	6 25 48.31	2.4439	19 41 28.3	0.556
7	4 33 27.76	2.3169	17 6 30.4	5.812	7	6 28 14.98	2.4452	19 41 57.9	0.432
8	4 35 46.89	2.3207	17 12 16.3	5.716	8	6 30 41.73	2.4464	19 42 20.1	0.309
9	4 38 6.24	2.3244	17 17 56.4	5.620	9	6 33 8.54	2.4475	19 42 34.9	0.184
10	4 40 25.82	2.3281	17 23 30.7	5.523	10	6 35 35.43	2.4486	19 42 42.2	0.060
11	4 42 45.62	2.3318	17 28 59.2	5.426	11	6 38 2.37	2.4496	19 42 42.1	0.064
12	4 45 5.64	2.3354	17 34 21.7	5.326	12	6 40 29.37	2.4504	19 42 34.6	0.189
13	4 47 25.87	2.3390	17 39 38.3	5.226	13	6 42 56.42	2.4513	19 42 19.6	0.313
14	4 49 46.32	2.3426	17 44 48.8	5.126	14	6 45 23.52	2.4520	19 41 57.1	0.438
15	4 52 6.98	2.3461	17 49 53.3	5.024	15	6 47 50.67	2.4527	19 41 27.0	0.563
16	4 54 27.85	2.3496	17 54 51.7	4.922	16	6 50 17.85	2.4534	19 40 49.5	0.688
17	4 56 48.93	2.3530	17 59 43.9	4.819	17	6 52 45.07	2.4540	19 40 4.4	0.813
18	4 59 10.22	2.3564	18 4 29.9	4.716	18	6 55 12.33	2.4545	19 39 11.9	0.938
19	5 1 31.71	2.3598	18 9 9.7	4.610	19	6 57 39.61	2.4549	19 38 11.9	1.063
20	5 3 53.40	2.3631	18 13 43.2	4.506	20	7 0 6.91	2.4553	19 37 4.4	1.188
21	5 6 15.28	2.3664	18 18 10.3	4.399	21	7 2 34.23	2.4556	19 35 49.3	1.313
22	5 8 37.36	2.3696	18 22 31.0	4.292	22	7 5 1.57	2.4557	19 34 26.8	1.438
23	5 10 59.64	2.3728	18 26 45.3	4.184	23	7 7 28.91	2.4556	19 32 56.8	1.563
24	5 13 22.10	2.3760	N.18 30 53.1	4.076	24	7 9 56.26	2.4559	N.19 31 19.2	1.687

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
THURSDAY 5.					SATURDAY 7.				
0	7 9 56.26	2.4880	N.19 31 19.2	1.687	0	9 6 45.63	2.3090	N.15 52 27.6	7.234
1	7 12 23.62	2.4889	19 29 34.2	1.812	1	9 9 9.14	2.3097	15 45 10.5	7.234
2	7 14 50.97	2.4898	19 27 41.7	1.937	2	9 11 32.51	2.3084	15 37 47.5	7.433
3	7 17 18.32	2.4907	19 25 41.8	2.061	3	9 13 55.75	2.3061	15 30 18.5	7.632
4	7 19 45.65	2.4916	19 23 34.4	2.186	4	9 16 18.85	2.3037	15 22 43.7	7.829
5	7 22 12.98	2.4925	19 21 19.5	2.310	5	9 18 41.80	2.3014	15 15 3.0	7.726
6	7 24 40.29	2.4934	19 18 57.2	2.433	6	9 21 4.61	2.2990	15 7 16.6	7.821
7	7 27 7.57	2.4943	19 16 27.5	2.557	7	9 23 27.29	2.2967	14 59 24.5	7.916
8	7 29 34.83	2.4951	19 13 50.4	2.680	8	9 25 49.82	2.2943	14 51 26.7	8.010
9	7 32 2.06	2.4958	19 11 5.8	2.804	9	9 28 12.20	2.2919	14 43 23.4	8.102
10	7 34 29.26	2.4969	19 8 13.9	2.926	10	9 30 34.44	2.2895	14 35 14.5	8.194
11	7 36 56.42	2.4973	19 5 14.7	3.049	11	9 32 56.54	2.2870	14 27 0.1	8.286
12	7 39 23.53	2.4976	19 2 8.0	3.171	12	9 35 18.49	2.2846	14 18 40.3	8.378
13	7 41 50.60	2.4980	18 58 54.0	3.294	13	9 37 40.30	2.2822	14 10 15.1	8.464
14	7 44 17.63	2.4980	18 55 32.8	3.415	14	9 40 1.96	2.2807	14 1 44.6	8.552
15	7 46 44.60	2.4981	18 52 4.2	3.537	15	9 42 23.47	2.2783	13 53 8.8	8.639
16	7 49 11.52	2.4981	18 48 28.4	3.658	16	9 44 44.83	2.2768	13 44 27.9	8.726
17	7 51 38.38	2.4971	18 44 45.3	3.778	17	9 47 6.05	2.2744	13 35 41.8	8.810
18	7 54 5.17	2.4961	18 40 55.0	3.898	18	9 49 27.12	2.2720	13 26 50.7	8.894
19	7 56 31.90	2.4949	18 36 57.5	4.018	19	9 51 48.04	2.2695	13 17 54.5	8.977
20	7 58 58.57	2.4938	18 32 52.9	4.137	20	9 54 8.82	2.2670	13 8 53.4	9.060
21	8 1 25.16	2.4925	18 28 41.1	4.256	21	9 56 29.45	2.2646	12 59 47.4	9.140
22	8 3 51.67	2.4913	18 24 22.2	4.374	22	9 58 49.93	2.2621	12 50 36.6	9.220
23	8 6 18.11	2.4899	N.18 19 56.2	4.492	23	10 1 10.27	2.2597	N.12 41 21.0	9.299
FRIDAY 6.					SUNDAY 8.				
0	8 8 44.46	2.4885	N.18 15 23.2	4.609	0	10 3 30.45	2.2582	N.12 32 0.7	9.377
1	8 11 10.73	2.4871	18 10 43.1	4.728	1	10 5 50.49	2.2568	12 22 35.8	9.453
2	8 13 36.91	2.4856	18 5 56.1	4.842	2	10 8 10.39	2.2554	12 13 6.3	9.529
3	8 16 3.00	2.4840	18 1 2.1	4.956	3	10 10 30.14	2.2539	12 3 32.3	9.604
4	8 18 29.00	2.4825	17 56 1.1	5.073	4	10 12 49.75	2.2525	11 53 53.8	9.678
5	8 20 54.90	2.4809	17 50 53.2	5.188	5	10 15 9.22	2.2510	11 44 10.9	9.750
6	8 23 20.70	2.4792	17 45 38.6	5.302	6	10 17 28.54	2.2496	11 34 23.7	9.822
7	8 25 46.40	2.4775	17 40 17.1	5.415	7	10 19 47.72	2.2481	11 24 32.3	9.893
8	8 28 12.00	2.4757	17 34 48.8	5.528	8	10 22 6.76	2.2461	11 14 36.7	9.961
9	8 30 37.49	2.4739	17 29 13.8	5.640	9	10 24 25.66	2.2446	11 4 36.9	10.029
10	8 33 2.87	2.4721	17 23 32.0	5.751	10	10 26 44.42	2.2431	10 54 33.1	10.096
11	8 35 28.14	2.4702	17 17 43.6	5.862	11	10 29 3.04	2.2416	10 44 25.4	10.162
12	8 37 53.30	2.4683	17 11 48.6	5.973	12	10 31 21.52	2.2400	10 34 13.7	10.226
13	8 40 18.34	2.4664	17 5 47.0	6.081	13	10 33 39.87	2.2385	10 23 58.1	10.290
14	8 42 43.26	2.4644	16 59 38.9	6.190	14	10 35 58.08	2.2369	10 13 36.8	10.354
15	8 45 8.07	2.4624	16 53 24.2	6.298	15	10 38 16.15	2.2353	10 3 15.7	10.416
16	8 47 32.75	2.4603	16 47 3.1	6.406	16	10 40 34.10	2.2338	9 52 49.0	10.478
17	8 49 57.31	2.4583	16 40 35.6	6.512	17	10 42 51.91	2.2322	9 42 18.6	10.538
18	8 52 21.74	2.4562	16 34 1.7	6.618	18	10 45 9.59	2.2307	9 31 44.8	10.593
19	8 54 46.05	2.4540	16 27 21.4	6.723	19	10 47 27.15	2.2291	9 21 7.5	10.650
20	8 57 10.23	2.4519	16 20 35.0	6.826	20	10 49 44.58	2.2275	9 10 26.8	10.705
21	8 59 34.28	2.4497	16 13 42.3	6.929	21	10 52 1.88	2.2259	8 59 42.8	10.760
22	9 1 58.20	2.4475	16 6 43.5	7.032	22	10 54 19.06	2.2243	8 48 55.6	10.813
23	9 4 22.00	2.4452	15 59 38.5	7.133	23	10 56 36.11	2.2228	8 38 5.2	10.866
24	9 6 45.63	2.4430	N.15 52 27.6	7.234	24	10 58 53.04	2.2212	N. 8 27 11.8	10.917

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
MONDAY 9.					WEDNESDAY 11.				
0	^h 10 ^m 58 ^s 53.04	2.2312	N. 8° 27' 11.8"	10.917	0	^h 12 ^m 46 ^s 40.83	2.2228	S. 0° 52' 56.3"	11.864
1	11 1 9.85	2.2792	8 16 15.3	10.967	1	12 48 54.25	2.2226	1 4 53.3	11.946
2	11 3 26.54	2.2773	8 5 15.8	11.016	2	12 51 7.65	2.2222	1 16 49.8	11.937
3	11 5 43.12	2.2763	7 54 13.4	11.063	3	12 53 21.04	2.2220	1 28 45.7	11.926
4	11 7 59.59	2.2754	7 43 8.2	11.110	4	12 55 34.41	2.2228	1 40 41.0	11.914
5	11 10 15.94	2.2716	7 32 0.2	11.156	5	12 57 47.77	2.2226	1 52 35.4	11.901
6	11 12 32.18	2.2697	7 20 49.6	11.199	6	13 0 1.12	2.2224	2 4 29.1	11.887
7	11 14 48.31	2.2680	7 9 36.4	11.242	7	13 2 14.46	2.2222	2 16 21.9	11.871
8	11 17 4.33	2.2663	6 58 20.6	11.284	8	13 4 27.80	2.2222	2 28 13.7	11.854
9	11 19 20.25	2.2644	6 47 2.3	11.324	9	13 6 41.13	2.2222	2 40 4.4	11.836
10	11 21 36.06	2.2627	6 35 41.7	11.363	10	13 8 54.46	2.2222	2 51 54.1	11.817
11	11 23 51.78	2.2610	6 24 18.7	11.401	11	13 11 7.79	2.2222	3 3 42.5	11.797
12	11 26 7.39	2.2594	6 12 53.6	11.438	12	13 13 21.12	2.2222	3 15 29.7	11.776
13	11 28 22.91	2.2578	6 1 26.2	11.474	13	13 15 34.46	2.2224	3 27 15.5	11.752
14	11 30 38.33	2.2563	5 49 56.7	11.508	14	13 17 47.81	2.2224	3 39 0.0	11.729
15	11 32 53.65	2.2547	5 38 25.2	11.543	15	13 20 1.16	2.2226	3 50 43.0	11.704
16	11 35 8.88	2.2531	5 26 51.8	11.574	16	13 22 14.52	2.2226	4 2 24.4	11.677
17	11 37 24.03	2.2517	5 15 16.4	11.606	17	13 24 27.90	2.2220	4 14 4.3	11.650
18	11 39 39.09	2.2503	5 3 39.2	11.634	18	13 26 41.28	2.2222	4 25 42.4	11.622
19	11 41 54.06	2.2488	4 52 0.3	11.663	19	13 28 54.68	2.2226	4 37 18.9	11.592
20	11 44 8.95	2.2475	4 40 19.7	11.690	20	13 31 8.10	2.2228	4 48 53.5	11.560
21	11 46 23.76	2.2461	4 28 37.6	11.716	21	13 33 21.53	2.2241	5 0 26.2	11.528
22	11 48 38.49	2.2448	4 16 53.9	11.740	22	13 35 34.99	2.2244	5 11 56.9	11.496
23	11 50 53.14	2.2435	N. 4° 5' 8.8"	11.764	23	13 37 48.46	2.2248	S. 5° 23' 25.5"	11.460
TUESDAY 10.					THURSDAY 12.				
0	11 53 7.71	2.2422	N. 3° 53' 22.3"	11.787	0	13 40 1.96	2.2262	S. 5° 34' 52.0"	11.424
1	11 55 22.22	2.2412	3 41 34.5	11.807	1	13 42 15.49	2.2266	5 46 16.4	11.398
2	11 57 36.65	2.2400	3 29 45.4	11.827	2	13 44 29.04	2.2261	5 57 38.6	11.370
3	11 59 51.02	2.2389	3 17 55.2	11.846	3	13 46 42.62	2.2266	6 8 58.4	11.341
4	12 2 5.32	2.2378	3 6 3.9	11.864	4	13 48 56.22	2.2270	6 20 15.9	11.311
5	12 4 19.56	2.2368	2 54 11.6	11.880	5	13 51 9.86	2.2276	6 31 30.9	11.279
6	12 6 33.73	2.2357	2 42 18.3	11.896	6	13 53 23.53	2.2281	6 42 43.4	11.247
7	12 8 47.85	2.2348	2 30 24.2	11.909	7	13 55 37.23	2.2286	6 53 53.3	11.213
8	12 11 1.91	2.2338	2 18 29.3	11.921	8	13 57 50.97	2.2292	7 5 0.6	11.189
9	12 13 15.91	2.2329	2 6 33.7	11.932	9	14 0 4.74	2.2298	7 16 5.2	11.163
10	12 15 29.86	2.2320	1 54 37.4	11.942	10	14 2 18.55	2.2304	7 27 6.9	11.136
11	12 17 43.75	2.2312	1 42 40.6	11.951	11	14 4 32.39	2.2311	7 38 5.9	11.108
12	12 19 57.60	2.2304	1 30 43.3	11.960	12	14 6 46.27	2.2317	7 49 1.8	11.080
13	12 22 11.40	2.2297	1 18 45.6	11.966	13	14 9 0.19	2.2324	7 59 54.8	11.050
14	12 24 25.16	2.2290	1 6 47.5	11.970	14	14 11 14.16	2.2331	8 10 44.8	11.020
15	12 26 38.88	2.2283	0 54 49.1	11.974	15	14 13 28.16	2.2338	8 21 31.6	11.754
16	12 28 52.56	2.2277	0 42 50.6	11.977	16	14 15 42.21	2.2345	8 32 15.3	11.701
17	12 31 6.20	2.2270	0 30 51.9	11.979	17	14 17 56.30	2.2352	8 42 55.7	11.646
18	12 33 19.81	2.2265	0 18 53.1	11.979	18	14 20 10.44	2.2360	8 53 32.8	11.591
19	12 35 33.38	2.2260	N. 0° 6' 54.4"	11.978	19	14 22 24.62	2.2367	9 4 6.6	11.534
20	12 37 46.93	2.2255	S. 0° 5' 4.2"	11.976	20	14 24 38.85	2.2375	9 14 36.9	11.476
21	12 40 0.44	2.2250	0 17 2.6	11.973	21	14 26 53.12	2.2383	9 25 3.7	11.417
22	12 42 13.93	2.2246	0 29 0.8	11.968	22	14 29 7.44	2.2391	9 35 27.0	11.358
23	12 44 27.39	2.2242	0 40 58.7	11.962	23	14 31 21.81	2.2399	9 45 46.7	11.297
24	12 46 40.83	2.2238	S. 0° 52' 56.3"	11.964	24	14 33 36.22	2.2407	S. 9° 56' 2.6"	11.236

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
FRIDAY 13.					SUNDAY 15.				
0	14 33 36.22	2.3407	S. 9 56' 2.6	10.226	0	16 22 3.15	2.2721	S. 16 39' 6.8	6.267
1	14 35 50.69	2.3416	10 6 14.9	10.173	1	16 24 19.54	2.2723	16 45 19.9	6.168
2	14 38 5.20	2.3423	10 16 23.3	10.108	2	16 26 35.95	2.2726	16 51 27.0	6.069
3	14 40 19.76	2.3433	10 26 27.9	10.043	3	16 28 52.36	2.2728	16 57 28.2	5.969
4	14 42 34.38	2.3440	10 36 28.5	9.977	4	16 31 8.78	2.2737	17 3 23.3	5.869
5	14 44 49.04	2.3449	10 46 25.2	9.911	5	16 33 25.20	2.2737	17 9 12.5	5.768
6	14 47 3.76	2.3457	10 56 17.8	9.843	6	16 35 41.63	2.2738	17 14 55.6	5.667
7	14 49 18.53	2.3465	11 6 6.3	9.774	7	16 37 58.06	2.2737	17 20 32.6	5.566
8	14 51 33.35	2.3474	11 15 50.7	9.706	8	16 40 14.48	2.2737	17 26 3.5	5.464
9	14 53 48.22	2.3482	11 25 30.9	9.634	9	16 42 30.90	2.2736	17 31 28.3	5.363
10	14 56 3.14	2.3491	11 35 6.9	9.563	10	16 44 47.32	2.2735	17 36 47.0	5.260
11	14 58 18.11	2.3499	11 44 38.5	9.491	11	16 47 3.72	2.2733	17 41 59.5	5.157
12	15 0 33.13	2.3508	11 54 5.7	9.417	12	16 49 20.12	2.2731	17 47 5.9	5.054
13	15 2 48.20	2.3516	12 3 28.5	9.343	13	16 51 36.50	2.2729	17 52 6.1	4.951
14	15 5 3.33	2.3525	12 12 46.9	9.268	14	16 53 52.87	2.2727	17 57 0.0	4.847
15	15 7 18.50	2.3533	12 22 0.7	9.192	15	16 56 9.22	2.2724	18 1 47.8	4.743
16	15 9 33.72	2.3543	12 31 9.9	9.116	16	16 58 25.56	2.2720	18 6 29.3	4.639
17	15 11 49.00	2.3550	12 40 14.5	9.037	17	17 0 41.87	2.2716	18 11 4.5	4.535
18	15 14 4.32	2.3558	12 49 14.4	8.959	18	17 2 58.15	2.2713	18 15 33.5	4.430
19	15 16 19.70	2.3566	12 58 9.6	8.880	19	17 5 14.41	2.2707	18 19 56.2	4.326
20	15 18 35.12	2.3574	13 7 0.0	8.799	20	17 7 30.64	2.2703	18 24 12.6	4.221
21	15 20 50.59	2.3582	13 15 45.5	8.718	21	17 9 46.83	2.2698	18 28 22.7	4.116
22	15 23 6.11	2.3590	13 24 26.2	8.636	22	17 12 2.99	2.2691	18 32 26.5	4.010
23	15 25 21.67	2.3598	S. 13 33 1.9	8.554	23	17 14 19.12	2.2684	S. 18 36 23.9	3.906
SATURDAY 14.					MONDAY 16.				
0	15 27 37.28	2.3606	S. 13 41 32.8	8.470	0	17 16 35.21	2.2676	S. 18 40 15.0	3.799
1	15 29 52.94	2.3613	13 49 58.3	8.388	1	17 18 51.26	2.2670	18 43 59.8	3.694
2	15 32 8.64	2.3621	13 58 18.9	8.301	2	17 21 7.26	2.2663	18 47 38.2	3.588
3	15 34 24.39	2.3628	14 6 34.4	8.216	3	17 23 23.21	2.2654	18 51 10.3	3.483
4	15 36 40.18	2.3635	14 14 44.8	8.130	4	17 25 39.11	2.2646	18 54 36.1	3.376
5	15 38 56.01	2.3643	14 22 50.0	8.043	5	17 27 54.96	2.2637	18 57 55.4	3.270
6	15 41 11.88	2.3649	14 30 49.9	7.956	6	17 30 10.75	2.2628	19 1 8.4	3.164
7	15 43 27.79	2.3655	14 38 44.6	7.868	7	17 32 26.49	2.2618	19 4 15.1	3.057
8	15 45 43.74	2.3662	14 46 33.9	7.777	8	17 34 42.17	2.2608	19 7 15.4	2.951
9	15 47 59.73	2.3668	14 54 17.9	7.687	9	17 36 57.79	2.2597	19 10 9.3	2.846
10	15 50 15.76	2.3674	15 1 56.4	7.596	10	17 39 13.34	2.2586	19 12 56.8	2.739
11	15 52 31.82	2.3680	15 9 29.5	7.503	11	17 41 28.82	2.2575	19 15 37.9	2.633
12	15 54 47.91	2.3686	15 16 57.0	7.413	12	17 43 44.24	2.2563	19 18 12.7	2.527
13	15 57 4.04	2.3690	15 24 19.0	7.321	13	17 45 59.58	2.2550	19 20 41.1	2.421
14	15 59 20.20	2.3696	15 31 35.5	7.228	14	17 48 14.84	2.2538	19 23 3.2	2.314
15	16 1 36.39	2.3700	15 38 46.4	7.134	15	17 50 30.03	2.2524	19 25 18.9	2.208
16	16 3 52.60	2.3705	15 45 51.6	7.040	16	17 52 45.14	2.2511	19 27 28.2	2.103
17	16 6 8.84	2.3709	15 52 51.2	6.945	17	17 55 0.16	2.2497	19 29 31.1	1.998
18	16 8 25.11	2.3713	15 59 45.1	6.850	18	17 57 15.10	2.2483	19 31 27.7	1.890
19	16 10 41.41	2.3717	16 6 33.2	6.754	19	17 59 29.95	2.2467	19 33 18.0	1.785
20	16 12 57.72	2.3720	16 13 15.6	6.658	20	18 1 44.71	2.2452	19 35 1.9	1.679
21	16 15 14.05	2.3723	16 19 52.2	6.561	21	18 3 59.38	2.2437	19 36 39.5	1.574
22	16 17 30.42	2.3726	16 26 22.9	6.463	22	18 6 13.95	2.2421	19 38 10.7	1.468
23	16 19 46.77	2.3729	16 32 47.8	6.366	23	18 8 28.43	2.2404	19 39 35.7	1.363
24	16 22 3.15	2.3731	S. 16 39 6.8	6.267	24	18 10 42.80	2.2387	S. 19 40 54.3	1.258

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
TUESDAY 17.					THURSDAY 19.				
0	18 10 42.80	2.2267	S.19° 40' 54.2"	1.2268	0	19 55 34.13	2.1201	S.18° 45' 45.2"	2.4202
1	18 12 57.07	2.2270	19 42 6.6	1.153	1	19 57 41.24	2.1171	18 42 18.0	2.405
2	18 15 11.28	2.2269	19 43 12.7	1.049	2	19 59 48.18	2.1141	18 38 45.7	2.392
3	18 17 25.29	2.2264	19 44 12.5	0.944	3	20 1 54.94	2.1111	18 35 8.2	2.367
4	18 19 39.24	2.2216	19 45 6.0	0.840	4	20 4 1.52	2.1081	18 31 25.6	2.342
5	18 21 53.08	2.2206	19 45 53.2	0.736	5	20 6 7.92	2.1054	18 27 37.9	2.327
6	18 24 6.80	2.2277	19 46 34.4	0.632	6	20 8 14.14	2.1022	18 23 45.2	2.311
7	18 26 20.40	2.2297	19 47 9.2	0.529	7	20 10 20.17	2.0991	18 19 47.4	2.294
8	18 28 33.89	2.2286	19 47 37.8	0.425	8	20 12 26.03	2.0961	18 15 44.7	2.267
9	18 30 47.26	2.2217	19 48 0.3	0.322	9	20 14 31.71	2.0931	18 11 37.0	2.170
10	18 33 0.50	2.2166	19 48 16.5	0.219	10	20 16 37.21	2.0901	18 7 24.3	2.122
11	18 35 13.61	2.2175	19 48 26.6	-0.117	11	20 18 42.53	2.0871	18 3 6.7	2.103
12	18 37 26.61	2.2164	19 48 30.5	0.014	12	20 20 47.67	2.0841	17 58 44.3	2.114
13	18 39 39.47	2.2180	19 48 28.3	0.087	13	20 22 52.63	2.0811	17 54 17.0	2.104
14	18 41 52.19	2.2110	19 48 20.0	0.160	14	20 24 57.41	2.0761	17 49 45.0	2.074
15	18 44 4.78	2.2067	19 48 5.6	0.260	15	20 27 2.00	2.0731	17 45 8.2	2.053
16	18 46 17.24	2.2064	19 47 45.2	0.361	16	20 29 6.42	2.0721	17 40 26.6	2.722
17	18 48 29.54	2.2041	19 47 18.7	0.493	17	20 31 10.66	2.0691	17 35 40.3	2.719
18	18 50 41.74	2.2010	19 46 46.2	0.592	18	20 33 14.72	2.0662	17 30 49.4	2.698
19	18 52 53.77	2.1994	19 46 7.7	0.692	19	20 35 18.60	2.0632	17 25 53.9	2.584
20	18 55 5.67	2.1970	19 45 23.2	0.791	20	20 37 22.30	2.0602	17 20 53.7	2.041
21	18 57 17.42	2.1946	19 44 32.7	0.891	21	20 39 25.83	2.0572	17 15 48.9	2.117
22	18 59 29.02	2.1931	19 43 36.3	0.990	22	20 41 29.17	2.0542	17 10 39.6	2.128
23	19 1 40.47	2.1896	S.19° 42' 33.9"	1.088	23	20 43 32.24	2.0514	S.17° 5' 25.8"	2.206
WEDNESDAY 18.					FRIDAY 20.				
0	19 8 51.77	2.1970	S.19° 41' 25.7"	1.188	0	20 45 35.23	2.0484	S.17° 0' 7.5"	2.282
1	19 6 2.92	2.1946	19 40 11.6	1.284	1	20 47 38.15	2.0456	16 54 44.8	2.415
2	19 8 13.91	2.1919	19 38 51.6	1.381	2	20 49 40.79	2.0428	16 49 17.6	2.480
3	19 10 24.75	2.1798	19 37 25.8	1.478	3	20 51 43.26	2.0397	16 43 46.1	2.562
4	19 12 35.43	2.1707	19 35 54.2	1.574	4	20 53 45.56	2.0366	16 38 10.2	2.624
5	19 14 45.95	2.1740	19 34 16.9	1.670	5	20 55 47.68	2.0339	16 32 30.1	2.705
6	19 16 56.31	2.1718	19 32 33.8	1.766	6	20 57 49.63	2.0311	16 26 45.6	2.776
7	19 19 6.51	2.1686	19 30 45.0	1.861	7	20 59 51.41	2.0283	16 20 56.9	2.847
8	19 21 16.55	2.1650	19 28 50.5	1.956	8	21 1 53.02	2.0254	16 15 4.0	2.927
9	19 23 26.42	2.1620	19 26 50.3	2.050	9	21 3 54.46	2.0226	16 9 6.9	2.986
10	19 25 36.13	2.1604	19 24 44.4	2.144	10	21 5 55.74	2.0196	16 3 5.6	2.086
11	19 27 45.67	2.1576	19 22 32.9	2.238	11	21 7 56.85	2.0171	15 57 0.2	2.154
12	19 29 55.05	2.1546	19 20 15.8	2.331	12	21 9 57.79	2.0143	15 50 50.7	2.192
13	19 32 4.25	2.1506	19 17 53.2	2.423	13	21 11 58.57	2.0116	15 44 37.2	2.266
14	19 34 13.29	2.1462	19 15 25.0	2.515	14	21 13 59.18	2.0088	15 38 19.7	2.326
15	19 36 22.16	2.1428	19 12 51.3	2.607	15	21 15 59.63	2.0063	15 31 58.1	2.391
16	19 38 30.85	2.1404	19 10 12.2	2.698	16	21 17 59.92	2.0034	15 25 32.7	2.467
17	19 40 39.37	2.1406	19 7 27.6	2.789	17	21 20 0.06	2.0009	15 19 3.3	2.522
18	19 42 47.72	2.1377	19 4 37.5	2.879	18	21 22 0.03	1.9983	15 12 30.0	2.567
19	19 44 55.89	2.1346	19 1 42.1	2.968	19	21 23 59.85	1.9957	15 5 52.9	2.601
20	19 47 3.89	2.1319	18 58 41.3	3.057	20	21 25 59.51	1.9931	14 59 11.9	2.714
21	19 49 11.72	2.1290	18 55 35.2	3.146	21	21 27 59.02	1.9906	14 52 27.1	2.777
22	19 51 19.37	2.1260	18 52 23.8	3.234	22	21 29 58.38	1.9880	14 45 38.6	2.840
23	19 53 26.84	2.1231	18 49 7.1	3.322	23	21 31 57.58	1.9855	14 38 46.3	2.902
24	19 55 34.13	2.1201	S.18° 45' 45.2"	3.409	24	21 33 56.64	1.9830	S.14° 31' 50.4"	2.968

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Dist. for 1 m.	Declination.	Dist. for 1 m.	Hour.	Right Ascension.	Dist. for 1 m.	Declination.	Dist. for 1 m.
SATURDAY 21.					MONDAY 23.				
0	21 33 56.64	1.9030	S. 14° 31' 50.4"	6.993	0	23 6 54.04	1.9047	S. 7° 56' 47.4"	9.200
1	21 35 55.55	1.9030	14 24 50.8	7.024	1	23 8 48.30	1.9041	7 47 28.3	9.236
2	21 37 54.31	1.9799	14 17 47.5	7.065	2	23 10 42.53	1.9046	7 38 7.0	9.272
3	21 39 52.93	1.9798	14 10 40.6	7.145	3	23 12 36.73	1.9080	7 28 43.6	9.307
4	21 41 51.41	1.9734	14 3 30.2	7.304	4	23 14 30.89	1.9085	7 19 18.1	9.442
5	21 43 49.74	1.9711	13 56 16.2	7.392	5	23 16 25.02	1.9090	7 9 50.6	9.476
6	21 45 47.94	1.9098	13 48 58.7	7.281	6	23 18 19.13	1.9016	7 0 21.0	9.510
7	21 47 46.00	1.9096	13 41 37.7	7.379	7	23 20 13.22	1.9013	6 50 49.4	9.543
8	21 49 43.92	1.9043	13 34 13.3	7.485	8	23 22 7.29	1.9010	6 41 15.8	9.575
9	21 51 41.71	1.9031	13 26 45.4	7.492	9	23 24 1.34	1.9007	6 31 40.3	9.607
10	21 53 39.37	1.9009	13 19 14.2	7.548	10	23 25 55.37	1.9006	6 22 2.9	9.639
11	21 55 36.90	1.9077	13 11 39.6	7.604	11	23 27 49.40	1.9003	6 12 23.6	9.670
12	21 57 34.30	1.9056	13 4 1.8	7.666	12	23 29 43.41	1.9002	6 2 42.5	9.701
13	21 59 31.57	1.9036	12 56 20.6	7.713	13	23 31 37.42	1.9001	5 52 59.5	9.731
14	22 1 28.73	1.9015	12 48 36.2	7.767	14	23 33 31.42	1.9001	5 43 14.8	9.760
15	22 3 25.76	1.9006	12 40 48.5	7.821	15	23 35 25.43	1.9001	5 33 28.3	9.790
16	22 5 22.67	1.9075	12 32 57.7	7.874	16	23 37 19.44	1.9002	5 23 40.1	9.817
17	22 7 19.46	1.9056	12 25 3.7	7.936	17	23 39 13.45	1.9003	5 13 50.2	9.845
18	22 9 16.13	1.9036	12 17 6.5	7.978	18	23 41 7.48	1.9006	5 3 58.7	9.872
19	22 11 12.69	1.9017	12 9 6.3	8.030	19	23 43 1.52	1.9008	4 54 5.6	9.899
20	22 13 9.14	1.9000	12 1 3.0	8.080	20	23 44 55.57	1.9010	4 44 10.8	9.926
21	22 15 5.48	1.9301	11 52 56.6	8.131	21	23 46 49.64	1.9014	4 34 14.5	9.951
22	22 17 1.71	1.9006	11 44 47.3	8.181	22	23 48 43.74	1.9018	4 24 16.7	9.976
23	22 18 57.84	1.9046	S. 11° 36' 34.9"	8.230	23	23 50 37.86	1.9022	S. 4° 14' 17.4"	10.000
SUNDAY 22.					TUESDAY 24.				
0	22 20 53.87	1.9029	S. 11° 28' 19.0"	8.279	0	23 52 32.01	1.9027	S. 4° 4' 16.6"	10.025
1	22 22 49.79	1.9013	11 20 1.4	8.287	1	23 54 26.18	1.9022	3 54 14.4	10.049
2	22 24 45.62	1.9007	11 11 40.3	8.375	2	23 56 20.39	1.9007	3 44 10.8	10.072
3	22 26 41.35	1.9081	11 3 16.4	8.423	3	23 58 14.63	1.9044	3 34 5.8	10.094
4	22 28 36.99	1.9006	10 54 49.6	8.470	4	0 0 8.92	1.9060	3 23 59.5	10.116
5	22 30 32.54	1.9061	10 46 20.0	8.515	5	0 2 3.24	1.9066	3 13 51.9	10.137
6	22 32 28.00	1.9036	10 37 47.7	8.562	6	0 3 57.61	1.9066	3 3 43.1	10.158
7	22 34 23.38	1.9022	10 29 12.6	8.607	7	0 5 52.03	1.9074	2 53 33.0	10.178
8	22 36 18.67	1.9009	10 20 34.8	8.662	8	0 7 46.49	1.9062	2 43 21.7	10.197
9	22 38 13.88	1.9196	10 11 54.4	8.695	9	0 9 41.02	1.9062	2 33 9.3	10.216
10	22 40 9.01	1.9169	10 3 11.3	8.740	10	0 11 35.59	1.9101	2 22 55.7	10.235
11	22 42 4.07	1.9170	9 54 25.6	8.783	11	0 13 30.23	1.9112	2 12 41.1	10.253
12	22 43 59.05	1.9156	9 45 37.3	8.826	12	0 15 24.94	1.9123	2 2 25.4	10.270
13	22 45 53.96	1.9148	9 36 46.5	8.869	13	0 17 19.71	1.9134	1 52 8.7	10.287
14	22 47 48.80	1.9135	9 27 53.1	8.910	14	0 19 14.55	1.9146	1 41 51.0	10.303
15	22 49 43.58	1.9124	9 18 57.2	8.951	15	0 21 9.46	1.9166	1 31 32.3	10.318
16	22 51 38.29	1.9114	9 9 58.9	8.992	16	0 23 4.45	1.9166	1 21 12.7	10.333
17	22 53 32.95	1.9104	9 0 56.2	9.033	17	0 24 59.52	1.9165	1 10 52.3	10.347
18	22 55 27.54	1.9094	8 51 55.0	9.072	18	0 26 54.67	1.9169	1 0 31.1	10.364
19	22 57 22.08	1.9086	8 42 49.5	9.111	19	0 28 49.90	1.9213	0 50 9.0	10.372
20	22 59 16.57	1.9077	8 33 41.6	9.150	20	0 30 45.22	1.9226	0 39 46.3	10.386
21	23 1 11.00	1.9069	8 24 31.5	9.188	21	0 32 40.64	1.9243	0 29 22.8	10.397
22	23 3 5.39	1.9061	8 15 19.0	9.226	22	0 34 36.14	1.9260	0 18 58.6	10.408
23	23 4 59.74	1.9054	8 6 4.3	9.263	23	0 36 31.75	1.9276	S. 0° 8' 33.8"	10.418
24	23 6 54.04	1.9047	S. 7° 56' 47.4"	9.300	24	0 38 27.45	1.9293	N. 0° 1' 51.6"	10.428

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
WEDNESDAY 25.					FRIDAY 27.				
0	0 38 27.45	1.9298	N. 0 1 51.6	10.428	0	2 13 58.95	2.0026	N. 8 20 5.9	10.025
1	0 40 23.26	1.9810	0 12 17.6	10.438	1	2 16 3.24	2.0736	8 30 6.5	9.986
2	0 42 19.17	1.9828	0 22 44.2	10.447	2	2 18 7.78	2.0777	8 40 5.4	9.966
3	0 44 15.20	1.9847	0 33 11.2	10.454	3	2 20 12.56	2.0818	8 50 2.4	9.934
4	0 46 11.34	1.9866	0 43 38.7	10.461	4	2 22 17.60	2.0860	8 59 57.5	9.902
5	0 48 7.60	1.9886	0 54 6.6	10.468	5	2 24 22.88	2.0902	9 9 50.7	9.880
6	0 50 3.97	1.9406	1 4 34.8	10.474	6	2 26 28.42	2.0944	9 19 41.8	9.834
7	0 52 0.47	1.9427	1 15 3.4	10.479	7	2 28 34.21	2.0987	9 29 30.8	9.790
8	0 53 57.09	1.9448	1 25 32.3	10.483	8	2 30 40.26	2.1030	9 39 17.7	9.763
9	0 55 53.84	1.9469	1 36 1.4	10.487	9	2 32 46.57	2.1073	9 49 2.4	9.736
10	0 57 50.72	1.9491	1 46 30.7	10.490	10	2 34 53.14	2.1117	9 58 44.8	9.687
11	0 59 47.74	1.9514	1 57 0.2	10.492	11	2 36 59.98	2.1162	10 8 24.8	9.648
12	1 1 44.89	1.9536	2 7 29.8	10.494	12	2 39 7.08	2.1206	10 18 2.5	9.606
13	1 3 42.18	1.9561	2 17 59.4	10.496	13	2 41 14.45	2.1261	10 27 37.7	9.566
14	1 5 39.62	1.9586	2 28 29.2	10.496	14	2 43 22.09	2.1306	10 37 10.4	9.524
15	1 7 37.20	1.9610	2 38 58.9	10.496	15	2 45 30.00	2.1361	10 46 40.6	9.480
16	1 9 34.94	1.9636	2 49 28.5	10.494	16	2 47 38.19	2.1387	10 56 8.1	9.436
17	1 11 32.82	1.9661	2 59 58.1	10.492	17	2 49 46.65	2.1433	11 5 32.9	9.380
18	1 13 30.87	1.9687	3 10 27.5	10.489	18	2 51 55.38	2.1479	11 14 54.9	9.348
19	1 15 29.07	1.9713	3 20 56.8	10.486	19	2 54 4.40	2.1526	11 24 14.1	9.306
20	1 17 27.43	1.9741	3 31 25.8	10.481	20	2 56 13.69	2.1573	11 33 30.4	9.267
21	1 19 25.96	1.9768	3 41 54.5	10.476	21	2 58 23.26	2.1619	11 42 43.7	9.197
22	1 21 24.65	1.9797	3 52 22.9	10.470	22	3 0 33.12	2.1666	11 51 54.0	9.148
23	1 23 23.51	1.9825	N. 4 2 51.0	10.464	23	3 2 43.26	2.1714	N. 12 1 1.2	9.088
THURSDAY 26.					SATURDAY 28.				
0	1 25 22.55	1.9884	N. 4 13 18.6	10.466	0	3 4 53.68	2.1761	N. 12 10 5.1	9.046
1	1 27 21.76	1.9884	4 23 45.7	10.448	1	3 7 4.39	2.1809	12 19 5.9	8.985
2	1 29 21.16	1.9914	4 34 12.3	10.439	2	3 9 15.39	2.1867	12 28 3.4	8.930
3	1 31 20.73	1.9946	4 44 38.4	10.430	3	3 11 26.67	2.1906	12 36 57.5	8.873
4	1 33 20.49	1.9976	4 55 3.9	10.419	4	3 13 38.25	2.1964	12 45 48.2	8.816
5	1 35 20.44	2.0007	5 5 28.7	10.407	5	3 15 50.12	2.2002	12 54 35.4	8.757
6	1 37 20.58	2.0039	5 15 52.8	10.396	6	3 18 2.28	2.2061	13 3 19.0	8.697
7	1 39 20.91	2.0072	5 26 16.1	10.382	7	3 20 14.73	2.2100	13 11 59.0	8.636
8	1 41 21.44	2.0106	5 36 38.6	10.368	8	3 22 27.47	2.2148	13 20 35.3	8.573
9	1 43 22.17	2.0139	5 47 0.2	10.353	9	3 24 40.51	2.2196	13 29 7.9	8.510
10	1 45 23.10	2.0173	5 57 21.0	10.337	10	3 26 53.85	2.2247	13 37 36.6	8.446
11	1 47 24.24	2.0207	6 7 40.7	10.321	11	3 29 7.47	2.2296	13 46 1.4	8.380
12	1 49 25.59	2.0242	6 17 59.5	10.303	12	3 31 21.40	2.2346	13 54 22.2	8.313
13	1 51 27.15	2.0277	6 28 17.2	10.286	13	3 33 35.62	2.2396	14 2 39.0	8.245
14	1 53 28.92	2.0313	6 38 33.7	10.266	14	3 35 50.14	2.2444	14 10 51.6	8.176
15	1 55 30.90	2.0349	6 48 49.1	10.246	15	3 38 4.95	2.2494	14 19 0.1	8.106
16	1 57 33.11	2.0386	6 59 3.3	10.226	16	3 40 20.06	2.2543	14 27 4.3	8.034
17	1 59 35.54	2.0423	7 9 16.2	10.204	17	3 42 35.47	2.2593	14 35 4.2	7.962
18	2 1 38.19	2.0461	7 19 27.8	10.181	18	3 44 51.17	2.2642	14 42 59.7	7.888
19	2 3 41.06	2.0499	7 29 38.0	10.157	19	3 47 7.17	2.2691	14 50 50.7	7.813
20	2 5 44.17	2.0537	7 39 46.7	10.133	20	3 49 23.47	2.2741	14 58 37.2	7.737
21	2 7 47.51	2.0576	7 49 53.9	10.107	21	3 51 40.06	2.2790	15 6 19.2	7.660
22	2 9 51.09	2.0616	7 59 59.6	10.081	22	3 53 56.95	2.2839	15 13 56.4	7.581
23	2 11 54.90	2.0656	8 10 3.6	10.053	23	3 56 14.13	2.2889	15 21 28.9	7.502
24	2 13 58.95	2.0695	N. 8 20 5.9	10.026	24	3 58 31.61	2.2938	N. 15 28 56.6	7.421

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SUNDAY 29.					MONDAY 30.				
0	3 58 31.61	2.9938	N.15° 28' 56.6"	7.421	0	4 54 56.55	2.4046	N.18° 1' 8.0"	5.187
1	4 0 49.38	2.9987	15 36 19.5	7.340	1	4 57 20.95	2.4087	18 6 14.2	5.049
2	4 3 7.45	2.9936	15 43 37.4	7.287	2	4 59 45.59	2.4138	18 11 13.9	4.941
3	4 5 25.81	2.9084	15 50 50.3	7.173	3	5 2 10.48	2.4108	18 16 7.1	4.833
4	4 7 44.46	2.9133	15 57 58.1	7.088	4	5 4 35.61	2.4208	18 20 53.7	4.722
5	4 10 3.41	2.9181	16 5 0.8	7.002	5	5 7 0.98	2.4247	18 25 33.7	4.610
6	4 12 22.64	2.9229	16 11 58.3	6.914	6	5 9 26.58	2.4286	18 30 7.0	4.498
7	4 14 42.16	2.9277	16 18 50.6	6.836	7	5 11 52.41	2.4334	18 34 33.5	4.386
8	4 17 1.97	2.9325	16 25 37.4	6.736	8	5 14 18.47	2.4361	18 38 53.3	4.273
9	4 19 22.06	2.9373	16 32 18.9	6.646	9	5 16 44.75	2.4396	18 43 6.1	4.167
10	4 21 42.44	2.9420	16 38 54.9	6.564	10	5 19 11.25	2.4434	18 47 12.1	4.041
11	4 24 3.11	2.9467	16 45 25.4	6.481	11	5 21 37.96	2.4470	18 51 11.1	3.924
12	4 26 24.05	2.9514	16 51 50.2	6.397	12	5 24 4.88	2.4504	18 55 3.0	3.807
13	4 28 45.27	2.9560	16 58 9.4	6.373	13	5 26 32.01	2.4530	18 58 47.9	3.689
14	4 31 6.77	2.9606	17 4 22.8	6.176	14	5 28 59.35	2.4573	19 2 25.7	3.570
15	4 33 28.55	2.9652	17 10 30.5	6.079	15	5 31 26.88	2.4606	19 5 56.3	3.450
16	4 35 50.60	2.9697	17 16 32.2	5.980	16	5 33 54.61	2.4636	19 9 19.7	3.329
17	4 38 12.92	2.9743	17 22 28.1	5.881	17	5 36 22.52	2.4687	19 12 35.9	3.209
18	4 40 35.51	2.9787	17 28 18.0	5.781	18	5 38 50.61	2.4698	19 15 44.8	3.087
19	4 42 58.36	2.9831	17 34 1.8	5.680	19	5 41 18.89	2.4729	19 18 46.4	2.966
20	4 45 21.48	2.9876	17 39 39.6	5.577	20	5 43 47.34	2.4766	19 21 40.7	2.842
21	4 47 44.86	2.9918	17 45 11.1	5.474	21	5 46 15.96	2.4784	19 24 27.5	2.718
22	4 50 8.50	2.9961	17 50 36.4	5.369	22	5 48 44.74	2.4811	19 27 6.8	2.594
23	4 52 32.40	2.4004	17 55 55.4	5.268	23	5 51 13.69	2.4837	19 29 38.7	2.469
24	4 54 56.55	2.4046	N.18 1 8.0	5.167	24	5 53 42.79	2.4863	N.19 32 3.1	2.343

PHASES OF THE MOON.

☾ Last Quarter,	d	h	m
● New Moon,	13	22	55.6
☽ First Quarter,	21	18	46.3
○ Full Moon,	29	13	0.5

☾ Perigee,	d	h
☾ Apogee,	21	14.5

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Dist.	IIIh.	P. L. of Dist.	VIh.	P. L. of Dist.	IXh.	P. L. of Dist.
1	Fomalhaut W.	78° 50' 49"	2873	80° 23' 44"	2860	81° 56' 54"	2848	83° 30' 19"	2838
	α Pegasi W.	64 8 15	2865	65 38 46	2865	67 9 42	2847	68 41 1	2831
	Jupiter W.	46 25 55	2861	48 5 44	2852	49 45 45	2843	51 25 59	2834
	Pollux E.	60 27 23	2868	58 49 53	2857	57 12 14	2851	55 34 28	2845
	Mars E.	84 17 17	2750	82 41 44	2741	81 5 59	2732	79 30 1	2722
	Regulus E.	96 2 30	2856	94 23 16	2877	92 43 49	2868	91 4 10	2859
2	Fomalhaut W.	91 20 35	2793	92 55 12	2788	94 29 58	2779	96 4 53	2774
	α Pegasi W.	76 22 40	2857	77 55 54	2845	79 29 23	2834	81 3 7	2823
	Jupiter W.	59 50 9	2492	61 31 33	2485	63 13 8	2477	64 54 54	2469
	α Arietis W.	32 56 46	2631	34 26 20	2631	35 56 56	2627	37 28 28	2626
	Pollux E.	47 23 58	2626	45 45 37	2624	44 7 15	2624	42 28 52	2625
	Mars ♄ E.	71 27 9	2678	69 50 0	2669	68 12 39	2662	66 35 8	2654
	Regulus E.	82 42 54	2617	81 2 4	2609	79 21 3	2602	77 39 52	2594
	Venus E.	112 18 49	2900	110 46 42	2901	109 14 24	2898	107 41 56	2884
3	Fomalhaut W.	104 1 5	2754	105 36 33	2753	107 12 3	2752	108 47 34	2751
	α Pegasi W.	88 54 55	2781	90 29 48	2775	92 4 49	2769	93 39 58	2763
	Jupiter W.	73 26 20	2433	75 9 7	2427	76 52 3	2422	78 35 7	2415
	α Arietis W.	45 17 17	2749	46 52 52	2727	48 28 56	2706	50 5 28	2687
	Pollux E.	34 17 47	2631	32 40 1	2622	31 2 29	2619	29 25 18	2608
	Mars E.	58 24 55	2616	56 46 22	2603	55 7 40	2603	53 28 49	2595
	Regulus E.	69 11 20	2486	67 29 8	2492	65 46 47	2446	64 4 17	2438
	Venus E.	99 57 1	2846	98 23 33	2839	96 49 56	2832	95 16 10	2825
4	Jupiter W.	87 12 39	2286	88 56 34	2280	90 40 37	2275	92 24 47	2270
	α Arietis W.	58 13 55	2610	59 52 36	2596	61 31 34	2586	63 10 47	2575
	Aldebaran W.	24 38 58	2410	26 22 18	2405	28 5 46	2399	29 49 21	2394
	Mars E.	45 12 25	2606	43 32 43	2561	41 52 54	2551	40 12 58	2550
	Regulus E.	55 29 33	2409	53 46 11	2403	52 2 41	2396	50 19 4	2383
	Venus E.	87 25 9	2794	85 50 33	2788	84 15 49	2782	82 40 58	2778
	SUN E.	129 38 17	2766	128 3 4	2759	126 27 41	2752	124 52 10	2746
5	Jupiter W.	101 7 25	2246	102 52 17	2242	104 37 15	2237	106 22 20	2233
	α Arietis W.	71 30 24	2630	73 10 56	2622	74 51 38	2615	76 32 30	2609
	Aldebaran W.	38 29 12	2206	40 13 32	2204	41 57 58	2200	43 42 31	2205
	Mars E.	31 51 33	2527	30 10 57	2523	28 30 16	2520	26 49 30	2517
	Regulus E.	41 39 7	2368	39 54 46	2364	38 10 19	2359	36 25 45	2356
	Venus E.	74 44 52	2750	73 9 18	2745	71 33 38	2741	69 57 52	2736
	SUN E.	116 52 25	2715	115 16 5	2710	113 39 37	2704	112 3 3	2699
6	α Arietis W.	84 58 58	2482	86 40 38	2477	88 22 24	2472	90 4 15	2468
	Aldebaran W.	52 26 50	2234	53 12 0	2231	55 57 15	2226	57 42 36	2222
	Venus E.	61 57 30	2714	60 21 9	2710	58 44 42	2706	57 8 10	2703
	SUN E.	103 58 31	2675	102 21 17	2671	100 43 58	2666	99 6 34	2663
7	α Arietis W.	98 34 41	2455	100 16 57	2455	101 59 14	2454	103 41 33	2453
	Aldebaran W.	66 30 39	2206	68 16 31	2202	70 2 27	2200	71 48 27	2200
	Pollux W.	24 6 56	2644	25 44 51	2601	27 23 46	2604	29 3 29	2604
	Venus E.	49 4 18	2684	47 27 17	2682	45 50 13	2679	44 13 5	2676
	SUN E.	90 58 11	2643	89 20 15	2640	87 42 15	2638	86 4 11	2636
8	Aldebaran W.	80 39 31	2284	82 25 55	2282	84 12 21	2280	85 58 50	2278
	Pollux W.	37 31 3	2433	39 13 49	2430	40 56 55	2408	42 40 17	2396
	Venus E.	36 6 33	2665	34 29 6	2663	32 51 37	2662	30 14 6	2662

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Dist.	XVh.	P. L. of Dist.	XVIIIh.	P. L. of Dist.	XXIh.	P. L. of Dist.
1	Fomalhaut W.	85° 3' 57"	2898	86° 37' 49"	2818	88° 11' 53"	2809	89° 46' 9"	2801
	α Pegasi W.	70 12 41	2914	71 44 42	2898	73 17 3	2898	74 49 43	2870
	Jupiter W.	53 6 25	2925	54 47 3	2817	56 27 53	2808	58 8 55	2800
	Pollux E.	53 56 34	2840	52 18 33	2835	50 40 26	2832	49 2 14	2829
	Mars E.	77 53 51	2713	76 17 28	2704	74 40 53	2695	73 4 7	2687
	Regulus E.	89 24 19	2830	87 44 15	2843	86 4 0	2833	84 23 33	2825
2	Fomalhaut W.	97 39 55	2788	99 15 5	2784	100 50 20	2780	102 25 40	2756
	α Pegasi W.	82 37 5	2813	84 11 16	2805	85 45 38	2795	87 20 11	2788
	Jupiter W.	66 36 51	2461	68 18 59	2455	70 1 16	2448	71 43 43	2441
	α Arietis W.	39 0 49	2892	40 33 58	2899	42 7 47	2900	43 42 15	2773
	Pollux E.	40 50 29	2826	39 12 10	2829	37 33 55	2834	35 55 46	2841
	Mars E.	64 57 26	2646	63 19 34	2638	61 41 31	2631	60 3 18	2624
	Regulus E.	75 58 30	2487	74 16 58	2479	72 35 15	2473	70 53 22	2465
	Venus E.	106 9 17	2876	104 36 28	2869	103 3 29	2861	101 30 20	2853
3	Fomalhaut W.	110 23 6	2783	111 58 36	2784	113 34 4	2785	115 9 29	2760
	α Pegasi W.	95 15 14	2780	96 50 35	2766	98 26 1	2758	100 1 31	2750
	Jupiter W.	80 18 20	2400	82 1 42	2408	83 45 12	2397	85 28 51	2391
	α Arietis W.	51 42 26	2899	53 19 47	2883	54 57 29	2838	56 35 33	2824
	Pollux E.	27 48 35	2723	26 12 25	2753	24 36 57	2794	23 2 20	2843
	Mars E.	51 49 49	2690	50 10 40	2684	48 31 23	2678	46 51 58	2672
	Regulus E.	62 21 37	2432	60 38 48	2426	58 55 51	2421	57 12 46	2416
	Venus E.	93 42 14	2818	92 8 10	2812	90 33 58	2806	88 59 38	2799
	SUN								
4	Jupiter W.	94 9 5	2365	95 53 30	2360	97 38 2	2356	99 22 40	2351
	α Arietis W.	64 50 16	2656	66 29 59	2650	68 9 55	2647	69 50 4	2638
	Aldebaran W.	31 33 5	2389	33 16 56	2384	35 0 54	2379	36 45 0	2373
	Mars E.	38 32 54	2645	36 52 43	2640	35 12 26	2636	33 32 3	2631
	Regulus E.	48 35 19	2367	46 51 26	2363	45 7 27	2378	43 23 21	2373
	Venus E.	81 5 59	2771	79 30 53	2768	77 55 40	2760	76 20 20	2754
	SUN	123 16 29	2738	121 40 40	2739	120 4 43	2726	118 28 38	2720
5	Jupiter W.	108 7 31	2329	109 52 48	2325	111 38 11	2321	113 23 40	2317
	α Arietis W.	78 13 31	2602	79 54 41	2497	81 35 59	2491	83 17 25	2486
	Aldebaran W.	45 27 10	2380	47 11 56	2346	48 56 48	2342	50 41 56	2338
	Mars E.	25 8 40	2614	23 27 46	2612	21 46 49	2610	20 5 50	2609
	Regulus E.	34 41 5	2360	32 56 19	2346	31 11 27	2342	29 26 29	2338
	Venus E.	68 22 0	2731	66 46 1	2726	65 9 56	2722	63 33 46	2720
	SUN	110 26 21	2694	108 49 33	2689	107 12 39	2684	105 35 38	2680
6	α Arietis W.	91 46 12	2465	93 28 14	2463	95 10 20	2460	96 52 29	2458
	Aldebaran W.	59 28 2	2319	61 13 34	2316	62 59 11	2312	64 44 53	2309
	Venus E.	55 31 33	2696	53 54 51	2695	52 18 5	2692	50 41 14	2688
	SUN	97 29 3	2659	95 51 28	2655	94 13 47	2651	92 36 1	2647
7	α Arietis W.	105 23 52	2453	107 6 11	2453	108 48 30	2454	110 30 48	2455
	Aldebaran W.	73 34 33	2394	75 20 42	2391	77 6 55	2389	78 53 11	2386
	Pollux W.	30 43 56	2607	32 24 59	2484	34 6 35	2465	35 48 38	2449
	Venus E.	42 35 53	2673	40 58 37	2671	39 21 18	2669	37 43 57	2667
	SUN	84 26 2	2692	82 47 50	2690	81 9 34	2686	79 31 15	2684
8	Aldebaran W.	87 45 22	2377	89 31 57	2374	91 18 33	2373	93 5 12	2372
	Pollux W.	44 23 55	2369	46 7 46	2361	47 51 47	2375	49 35 59	2368
	Venus E.	28 36 34	2662	26 59 1	2662	25 21 28	2661	23 43 55	2660

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Diff.	III ^h .	P. L. of Diff.	VI ^h .	P. L. of Diff.	IX ^h .	P. L. of Diff.
8	SUN	E.	77° 52' 52"	2621	76° 14' 26"	2620	74° 35' 58"	2618	72° 57' 28"	2616
9	Aldebaran	W.	94 51 52	2271	96 38 34	2270	98 25 16	2270	100 12 0	2270
	Pollux	W.	51 20 19	2262	53 4 49	2267	54 49 25	2268	56 34 8	2260
	Mars	W.	22 49 37	2437	24 32 33	2434	26 15 33	2428	27 58 35	2421
	SUN	E.	64 44 27	2612	63 5 48	2612	61 27 9	2612	59 48 29	2612
10	Aldebaran	W.	109 5 37	2272	110 52 18	2272	112 38 57	2274	114 25 34	2277
	Pollux	W.	65 18 43	2280	67 3 46	2288	68 48 49	2286	70 33 53	2288
	Mars	W.	36 34 15	2417	38 17 25	2418	40 0 34	2419	41 43 41	2420
	SUN	E.	51 35 32	2620	49 57 4	2622	48 18 39	2626	46 40 19	2622
11	Pollux	W.	79 18 50	2248	81 3 40	2251	82 48 26	2254	84 33 7	2256
	Mars	W.	50 18 45	2422	52 1 34	2426	53 44 19	2428	55 26 59	2443
	SUN	E.	38 30 6	2666	36 52 27	2663	35 14 58	2672	33 37 40	2681
16	SUN	W.	25 35 24	2116	27 3 15	2122	28 30 57	2121	29 58 29	2140
	Fomalhaut	E.	75 14 0	2970	73 43 10	2980	72 12 44	2980	70 42 42	2979
	α Pegasi	E.	90 23 18	2001	88 53 7	2017	87 23 15	2031	85 53 41	2046
	Jupiter	E.	104 56 59	2664	103 19 31	2678	101 42 22	2692	100 5 31	2706
17	SUN	W.	37 13 15	2193	38 39 32	2204	40 5 36	2216	41 31 25	2228
	Fomalhaut	E.	63 18 53	2126	61 51 27	2160	60 24 30	2164	58 58 2	2200
	α Pegasi	E.	78 30 38	2126	77 3 2	2146	75 35 48	2166	74 8 57	2163
	Jupiter	E.	92 5 53	2774	90 30 51	2787	88 56 6	2801	87 21 39	2814
18	SUN	W.	48 37 3	2268	50 1 28	2280	51 25 41	2212	52 49 40	2222
	Fomalhaut	E.	51 53 37	2268	50 30 27	2286	49 7 55	2421	47 46 2	2457
	α Pegasi	E.	67 0 17	2262	65 35 44	2304	64 11 37	2326	62 47 56	2349
	Jupiter	E.	79 33 33	2676	78 0 44	2688	76 28 10	2699	74 55 50	2711
	α Arietis	E.	109 54 19	2662	108 25 10	2680	106 56 13	2699	105 27 26	2678
19	SUN	W.	59 46 28	2372	61 9 15	2383	62 31 51	2392	63 54 17	2400
	Fomalhaut	E.	41 7 39	2680	39 50 31	2726	38 34 22	2726	37 19 16	2662
	α Pegasi	E.	55 56 18	2476	54 35 27	2504	53 15 7	2534	51 55 20	2564
	Jupiter	E.	67 17 40	2968	65 46 41	2972	64 15 53	2981	62 45 16	2969
	α Arietis	E.	98 6 11	2121	96 38 27	2129	95 10 53	2138	93 43 28	2146
20	SUN	W.	70 44 10	2428	72 5 44	2444	73 27 11	2449	74 48 32	2454
	Fomalhaut	E.	31 22 54	4227	30 16 26	4420	29 11 50	4590	28 9 17	4761
	α Pegasi	E.	45 25 35	2751	44 9 42	2797	42 54 37	2848	41 40 24	2901
	Jupiter	E.	55 14 40	2626	53 45 00	2632	52 15 27	2636	50 46 1	2643
	α Arietis	E.	86 28 44	2189	85 2 13	2188	83 35 49	2194	82 9 33	2200
	Aldebaran	E.	118 41 10	2624	117 11 39	2626	115 42 15	2644	114 12 57	2649
21	SUN	W.	81 34 4	2472	82 54 59	2474	84 15 52	2476	85 36 43	2477
	Jupiter	E.	43 20 18	2663	41 51 23	2668	39 22 30	2668	37 53 41	2668
	α Arietis	E.	74 59 52	2226	73 34 13	2231	72 8 40	2236	70 43 12	2239
	Aldebaran	E.	106 47 47	2607	105 18 56	2606	103 50 8	2670	102 21 22	2671
22	SUN	W.	92 20 53	2474	93 41 46	2472	95 2 42	2470	96 23 40	2468
	α Aquilæ	W.	43 45 26	4206	44 52 13	4241	46 0 0	4180	47 8 43	4127
	α Arietis	E.	63 36 58	2166	62 11 56	2169	60 46 57	2208	59 22 2	2206
	Aldebaran	E.	94 57 36	2626	93 28 48	2607	91 59 58	2606	90 31 4	2602

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Dist.	XV ^h .	P. L. of Dist.	XVIII ^h .	P. L. of Dist.	XX ^h .	P. L. of Dist.
8	SUN E.	71° 18' 55"	2616	69° 40' 20"	2614	68° 1' 43"	2613	66° 23' 6"	2612
9	Aldebaran W.	101 58 44	2370	103 45 28	2270	105 32 12	2270	107 18 55	2271
	Pollux W.	58 18 55	2346	60 3 47	2344	61 48 43	2342	63 33 42	2340
	Mars W.	29 41 40	2419	31 24 47	2418	33 7 56	2418	34 51 5	2417
	SUN E.	58 9 50	2613	56 31 13	2614	54 52 37	2615	53 14 3	2616
10	Aldebaran W.	116 12 9	2279	117 58 40	2281	119 45 8	2288	121 31 32	2287
	Pollux W.	72 18 56	2339	74 3 58	2341	75 48 58	2343	77 33 55	2345
	Mars W.	43 26 48	2422	45 9 52	2424	46 52 53	2426	48 35 51	2428
	SUN E.	45 2 3	2633	43 23 53	2638	41 45 50	2643	40 7 54	2649
11	Pollux W.	86 17 43	2362	88 2 12	2367	89 46 34	2372	91 30 49	2378
	Mars W.	57 9 33	2448	58 52 0	2452	60 34 21	2456	62 16 34	2462
	SUN E.	32 0 35	2662	30 23 44	2704	28 47 9	2716	27 10 52	2731
16	SUN W.	81 25 51	3149	32 53 1	3159	34 19 58	3170	35 46 43	3182
	Fomalhaut E.	69 13 5	3050	67 43 54	3069	66 15 7	3091	64 46 46	3114
	α Pegasi E.	84 24 25	3061	82 55 28	3078	81 26 51	3098	79 58 35	3110
	Jupiter E.	98 28 59	2730	96 52 46	2738	95 16 50	2747	93 41 13	2760
17	SUN W.	42 57 1	3241	44 22 22	3253	45 47 30	3265	47 12 23	3276
	Fomalhaut E.	57 32 4	3226	56 6 38	3264	54 41 44	3292	53 17 23	3322
	α Pegasi E.	72 42 27	3201	71 16 19	3221	69 50 35	3241	68 25 14	3261
	Jupiter E.	85 47 29	2936	84 13 34	2938	82 39 56	2952	81 6 36	2966
18	SUN W.	54 13 26	3332	55 37 0	3344	57 0 21	3354	58 23 31	3364
	Fomalhaut E.	46 24 49	3496	45 4 20	3537	43 44 37	3561	42 25 42	3599
	α Pegasi E.	61 24 41	3372	60 1 52	3396	58 39 31	3429	57 17 39	3449
	Jupiter E.	73 23 45	2922	71 51 54	2933	70 20 16	2942	68 48 51	2963
	α Arietis E.	103 58 49	3087	102 30 24	3098	101 2 9	3106	99 34 5	3118
19	SUN W.	65 16 34	3408	66 38 40	3416	68 0 38	3428	69 22 28	3431
	Fomalhaut E.	36 5 18	3937	34 52 36	4016	33 41 12	4106	32 31 16	4204
	α Pegasi E.	50 36 6	3566	49 17 30	3633	47 59 31	3670	46 42 12	3709
	Jupiter E.	61 14 49	2997	59 44 33	3008	58 14 26	3012	56 44 28	3020
	α Arietis E.	92 16 14	3128	90 49 8	3160	89 22 12	3166	87 55 24	3176
20	SUN W.	76 9 48	3459	77 30 58	3463	78 52 4	3468	80 13 6	3470
	Fomalhaut E.	27 9 0	4946	26 11 22	5164	25 16 33	5416	24 24 51	5712
	α Pegasi E.	40 27 5	3686	39 14 44	4023	38 3 27	4098	36 53 19	4169
	Jupiter E.	49 16 42	3046	47 47 20	3062	46 18 21	3066	44 49 17	3080
	α Arietis E.	80 43 24	3206	79 17 22	3211	77 51 26	3216	76 25 36	3221
	Aldebaran E.	112 43 45	3054	111 14 39	3058	109 45 38	3061	108 16 40	3064
21	SUN W.	86 57 33	3478	88 18 23	3478	89 39 12	3477	91 0 2	3476
	Jupiter E.	36 24 52	3070	34 56 6	3076	33 27 20	3076	31 58 34	3070
	α Arietis E.	69 17 49	3248	67 52 30	3247	66 27 16	3250	65 2 5	3253
	Aldebaran E.	100 52 37	3072	99 23 52	3073	97 55 8	3071	96 26 23	3070
22	SUN W.	97 44 42	3468	99 5 49	3466	100 27 0	3454	101 48 16	3447
	α Aquilæ W.	48 18 19	4074	49 28 46	4076	50 40 1	3990	51 52 0	3987
	α Arietis E.	57 57 10	3269	56 32 23	3272	55 7 39	3276	53 42 59	3281
	Aldebaran E.	89 2 7	3066	87 33 5	3064	86 3 59	3046	84 34 48	3044

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Dist.	III ^h .	P. L. of Dist.	VI ^h .	P. L. of Dist.	IX ^h .	P. L. of Dist.
23	SUN W.	108° 9' 38"	3443	104° 31' 7"	3437	105° 52' 42"	3430	107° 14' 25"	3423
	α Aquilæ W.	53 4 42	3399	54 18 3	3390	55 32 3	3395	56 46 39	3792
	α Arietis E.	52 18 25	3398	50 53 57	3399	49 29 33	3394	48 5 15	3300
	Aldebaran E.	83 5 30	3089	81 36 6	3084	80 6 34	3077	78 36 55	3020
24	SUN W.	114 5 11	3390	115 27 50	3370	116 50 40	3360	118 13 42	3350
	α Aquilæ W.	63 7 57	3644	64 25 44	3619	65 43 58	3604	67 2 39	3570
	Fomalhaut W.	30 4 7	4297	31 11 12	4198	32 20 10	4080	33 30 51	3993
	α Arietis E.	41 5 56	3348	39 42 40	3364	38 19 42	3362	36 57 5	3403
	Aldebaran E.	71 6 21	3090	69 35 43	3071	68 4 54	3069	66 33 52	2961
	Pollux E.	114 54 31	3047	113 25 16	3035	111 55 46	3024	110 26 3	3013
25	SUN W.	125 11 58	3294	126 36 17	3261	128 0 51	3260	129 25 39	3255
	α Aquilæ W.	73 42 24	3461	75 3 32	3440	76 25 3	3423	77 46 55	3402
	Fomalhaut W.	39 45 31	3606	41 3 59	3561	42 23 27	3500	43 43 51	3454
	α Pegasi W.	28 41 59	4623	29 41 16	4636	30 43 11	4608	31 47 31	4519
	Aldebaran E.	58 55 27	3006	57 23 3	3084	55 50 24	3073	54 17 29	3060
	Pollux E.	102 53 52	3064	101 22 40	3041	99 51 13	3028	98 19 25	3016
26	α Aquilæ W.	84 41 28	3316	86 5 21	3300	87 29 32	3296	88 54 00	3271
	Fomalhaut W.	50 38 7	3256	52 3 10	3223	53 28 52	3192	54 55 11	3161
	α Pegasi W.	37 39 28	3779	38 54 52	3700	40 11 39	3626	41 29 43	3592
	Jupiter W.	17 13 35	3618	18 47 39	3601	20 22 5	3786	21 56 53	3767
	Aldebaran E.	46 28 48	3794	44 54 12	3780	43 19 18	3766	41 44 7	3753
	Pollux E.	90 36 42	3046	89 3 17	3035	87 29 34	3021	85 55 33	3007
27	α Aquilæ W.	96 0 20	3309	97 26 19	3196	98 52 30	3180	100 18 52	3161
	Fomalhaut W.	62 15 27	3037	63 45 6	3003	65 15 15	2961	66 45 52	2966
	α Pegasi W.	48 16 43	3266	49 41 0	3223	51 6 8	3213	52 32 3	3173
	Jupiter W.	29 56 13	3689	31 33 7	3674	33 10 22	3650	34 47 57	3645
	Aldebaran E.	33 43 30	3082	32 6 26	3068	30 29 2	3053	28 51 20	3039
	Pollux E.	78 0 59	3736	76 25 10	3725	74 49 3	3713	73 12 39	3696
	Mars E.	113 10 7	3006	111 35 46	3790	110 1 5	3776	108 26 4	3760
28	Fomalhaut W.	74 25 44	3686	75 58 57	3639	77 32 34	3623	79 6 33	3606
	α Pegasi W.	59 52 21	3011	61 22 20	3064	62 52 53	3066	64 23 58	3064
	Jupiter W.	43 0 44	3673	44 40 16	3650	46 20 8	3645	48 0 19	3632
	Pollux E.	65 6 15	3036	63 28 7	3024	61 49 44	3012	60 11 5	3001
	Mars E.	100 26 4	3067	98 49 6	3073	97 11 48	3067	95 34 11	2844
	Regulus E.	100 45 43	3696	99 6 4	3654	97 26 6	3641	95 45 50	3627
29	Fomalhaut W.	87 1 34	3733	88 37 30	3730	90 13 43	3700	91 50 11	3697
	α Pegasi W.	72 6 47	3037	73 40 40	3006	75 14 57	3790	76 49 38	3773
	Jupiter W.	56 25 45	3467	58 7 44	3450	59 49 59	3444	61 32 31	3432
	α Arietis W.	28 55 43	3140	30 23 4	3066	31 51 58	3097	33 22 15	3087
	Pollux E.	51 54 19	3064	50 14 20	3047	48 34 12	3040	46 53 54	2934
	Regulus E.	87 19 53	3463	85 37 48	3451	83 55 26	3440	82 12 48	3429
	Mars E.	87 21 29	3677	85 42 2	3664	84 2 17	3661	82 22 15	2640
30	α Pegasi W.	84 47 57	3707	86 24 28	3696	88 1 14	3687	89 38 12	3678
	Jupiter W.	70 9 7	2980	71 53 11	2970	73 37 29	2962	75 21 59	2958
	α Arietis W.	41 10 12	3730	42 46 25	3680	44 23 19	3660	46 0 52	2635
	Pollux E.	38 30 51	3022	36 50 10	3026	35 9 32	3033	33 29 3	2640
	Regulus E.	73 35 39	3676	71 51 29	3660	70 7 5	3657	68 22 28	2348
	Mars E.	73 58 5	2484	72 16 29	2476	70 34 40	2466	68 52 38	2466

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Dist.	XVh.	P. L. of Dist.	XVIIIh.	P. L. of Dist.	XXIh.	P. L. of Dist.
23	SUN W.	106° 36' 16"	3415	109° 58' 16"	3497	111° 20' 24"	3599	112° 42' 42"	3599
	α Aquilæ W.	58 1 50	3760	59 17 34	3728	60 33 51	3699	61 50 39	3671
	α Arietis E.	46 41 3	3308	45 17 1	3316	43 53 8	3325	42 29 26	3336
	Aldebaran E.	77 7 7	3013	75 37 10	3006	74 7 4	2997	72 36 48	2989
24	SUN W.	119 36 56	3339	121 0 22	3326	122 24 0	3317	123 47 52	3306
	α Aquilæ W.	68 21 46	3546	69 41 19	3524	71 1 17	3503	72 21 39	3481
	Fomalhaut W.	34 43 7	3879	35 56 48	3800	37 11 50	3729	38 28 6	3664
	α Arietis E.	35 34 51	3426	34 13 4	3454	32 51 48	3499	31 31 13	3534
	Aldebaran E.	65 2 38	2941	63 31 11	2990	61 59 31	3019	60 27 36	2998
	Pollux E.	108 56 6	3001	107 25 55	2999	105 55 29	2977	104 24 48	2966
25	SUN W.	130 50 42	3243	132 16 0	3231	133 41 33	3218	135 7 21	3204
	α Aquilæ W.	79 9 9	3384	80 31 44	3366	81 54 39	3349	83 17 54	3332
	Fomalhaut W.	45 5 7	3409	46 27 13	3367	47 50 7	3328	49 13 46	3292
	α Pegasi W.	32 54 6	4186	34 2 45	4099	35 13 17	4093	36 25 34	4096
	Aldebaran E.	52 44 18	2947	51 10 51	2933	49 37 7	2921	48 3 6	2906
	Pollux E.	96 47 30	2993	95 15 14	2999	93 42 40	2976	92 9 50	2962
26	α Aquilæ W.	90 18 45	3287	91 43 47	3244	93 9 4	3232	94 34 35	3220
	Fomalhaut W.	56 22 7	3132	57 49 38	3106	59 17 42	3078	61 46 19	3062
	α Pegasi W.	42 48 59	3800	44 9 23	3443	45 30 51	3390	46 53 19	3341
	Jupiter W.	23 32 4	3753	25 7 35	3737	26 43 26	3720	28 19 39	3704
	Aldebaran E.	40 8 37	2739	38 32 48	2726	36 56 41	2710	35 20 15	2696
	Pollux E.	84 21 14	2793	82 46 37	2779	81 11 43	2766	79 36 30	2752
27	α Aquilæ W.	101 45 24	3173	103 12 5	3167	104 38 54	3161	106 5 50	3156
	Fomalhaut W.	68 16 58	2936	69 48 31	2916	71 20 30	2895	72 52 55	2876
	α Pegasi W.	53 58 44	3138	55 26 8	3104	56 54 13	3071	58 22 58	3040
	Jupiter W.	36 25 51	3630	38 4 5	3615	39 42 39	3601	41 21 32	3588
	Aldebaran E.	27 13 18	2926	25 34 58	2913	23 56 19	2899	22 17 21	2886
	Pollux E.	71 35 57	2686	69 58 57	2673	68 21 40	2660	66 44 5	2647
	Mars E.	106 50 43	2744	104 15 2	2730	102 39 2	2716	101 2 43	2701
28	Fomalhaut W.	80 40 53	2790	82 15 34	2776	83 50 35	2760	85 25 55	2747
	α Pegasi W.	65 55 34	2909	67 27 41	2897	69 0 16	2886	70 33 18	2846
	Jupiter W.	49 40 47	2618	51 21 35	2606	53 2 41	2493	54 44 4	2480
	Pollux E.	58 32 12	2691	56 53 3	2680	55 13 41	2671	53 34 6	2662
	Mars E.	93 56 16	2630	92 18 2	2616	90 39 29	2603	89 0 38	2590
	Regulus E.	94 5 15	2614	92 24 21	2601	90 43 9	2489	89 1 40	2476
29	Fomalhaut W.	93 26 55	2687	95 3 52	2678	96 41 2	2669	98 18 23	2661
	α Pegasi W.	78 24 41	2769	80 0 3	2743	81 35 44	2732	83 11 42	2719
	Jupiter W.	63 15 20	2421	64 58 25	2411	66 41 44	2401	68 25 18	2390
	α Arietis W.	34 53 47	3884	36 26 26	3836	38 0 7	3793	39 34 44	3764
	Pollux E.	45 13 28	2629	43 32 55	2626	41 52 16	2622	40 11 34	2623
	Regulus E.	80 29 54	2417	78 46 43	2406	77 3 17	2396	75 19 35	2386
	Mars E.	80 41 57	2627	79 1 22	2617	77 20 32	2606	75 32 26	2494
30	α Pegasi W.	91 15 21	2669	92 52 42	2663	94 30 12	2656	96 7 51	2651
	Jupiter W.	77 6 42	2844	78 51 37	2837	80 36 43	2829	82 22 0	2823
	α Arietis W.	47 39 0	2610	49 17 41	2609	50 56 51	2608	52 36 38	2600
	Pollux E.	31 48 45	2651	30 8 44	2667	28 29 3	2667	26 49 50	2616
	Regulus E.	66 37 38	2839	64 52 36	2831	63 7 22	2824	61 21 57	2816
	Mars E.	67 10 22	2446	65 27 53	2438	63 45 13	2431	62 2 22	2423

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sideral Time of the Semidiameter passing the Meridian.	Equation of Time, to be subtracted from added to Apparent Time.	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Semidiameter.			
Tues.	1	^h 16 ^m 31 ^s 51.48	10.810	S.21° 54' 30.6"	22.70	16' 16.11"	70.36	^m 10 ^s 35.42	0.953
Wed.	2	16 36 11.28	10.836	22 3 23.3	21.65	16 16.25	70.44	10 12.24	0.979
Thur.	3	16 40 31.71	10.861	22 11 50.4	20.58	16 16.39	70.52	9 48.43	1.004
Fri.	4	16 44 52.74	10.885	22 19 51.9	19.50	16 16.52	70.60	9 24.02	1.029
Sat.	5	16 49 14.34	10.909	22 27 27.3	18.41	16 16.65	70.67	8 59.05	1.053
Sun.	6	16 53 36.49	10.931	22 34 36.2	17.31	16 16.77	70.74	8 33.53	1.075
Mon.	7	16 57 59.19	10.953	22 41 18.7	16.20	16 16.89	70.81	8 7.45	1.096
Tues.	8	17 2 22.39	10.973	22 47 34.5	15.09	16 17.00	70.87	7 40.88	1.116
Wed.	9	17 6 46.06	10.992	22 53 23.5	13.96	16 17.11	70.93	7 13.84	1.135
Thur.	10	17 11 10.17	11.010	22 58 45.4	12.83	16 17.21	70.98	6 46.36	1.153
Fri.	11	17 15 34.68	11.026	23 3 40.0	11.69	16 17.31	71.03	6 18.48	1.169
Sat.	12	17 19 59.57	11.041	23 8 7.2	10.55	16 17.41	71.08	5 50.23	1.184
Sun.	13	17 24 24.81	11.054	23 12 6.7	9.40	16 17.50	71.12	5 21.63	1.197
Mon.	14	17 28 50.35	11.066	23 15 38.5	8.24	16 17.59	71.16	4 52.73	1.209
Tues.	15	17 33 16.17	11.076	23 18 42.5	7.08	16 17.68	71.19	4 23.55	1.219
Wed.	16	17 37 42.21	11.085	23 21 18.4	5.91	16 17.76	71.22	3 54.14	1.228
Thur.	17	17 42 8.44	11.092	23 23 26.2	4.74	16 17.84	71.24	3 24.54	1.235
Fri.	18	17 46 34.82	11.098	23 25 5.9	3.56	16 17.91	71.26	2 54.80	1.241
Sat.	19	17 51 1.32	11.102	23 26 17.4	2.38	16 17.98	71.28	2 24.94	1.245
Sun.	20	17 55 27.90	11.105	23 27 0.5	1.20	16 18.05	71.29	1 55.00	1.248
Mon.	21	17 59 54.53	11.106	23 27 15.3	0.02	16 18.11	71.30	1 25.00	1.249
Tues.	22	18 4 21.17	11.105	23 27 1.8	1.16	16 18.17	71.30	0 55.01	1.249
Wed.	23	18 8 47.78	11.103	23 26 20.0	2.34	16 18.22	71.30	0 25.04	1.247
Thur.	24	18 13 14.34	11.100	23 25 9.9	3.51	16 18.26	71.29	0 4.87	1.244
Fri.	25	18 17 40.79	11.096	23 23 31.5	4.69	16 18.30	71.28	0 34.69	1.239
Sat.	26	18 23 7.12	11.090	23 21 24.9	5.86	16 18.34	71.26	0 4.38	1.233
Sun.	27	18 26 33.30	11.083	23 18 50.1	7.03	16 18.37	71.24	0 33.92	1.226
Mon.	28	18 30 59.29	11.075	23 15 47.2	8.20	16 18.39	71.21	2 3.27	1.218
Tues.	29	18 35 25.06	11.066	23 12 16.3	9.37	16 18.41	71.18	2 32.41	1.209
Wed.	30	18 39 50.60	11.055	23 8 17.4	10.53	16 18.42	71.15	3 1.31	1.198
Thur.	31	18 44 15.87	11.043	23 3 50.7	11.68	16 18.42	71.11	3 29.95	1.186
Fri.	32	18 48 40.85	11.030	S.22° 58' 56.5"	12.83	16 18.42	71.07	3 58.30	1.174

NOTE. — Mean Time of the Semidiameter passing may be found by subtracting 0s.19 from the Sideral Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be added to		Diff. for 1 hour.	Sidereal Time.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	subtracted from Mean Time.			
Tues.	1	^h 16 ^m 31 ^s 53.39	10.810	S. 21° 54' 34.6"	22.70	^m 10 ^s 35.24	0.953	^h 16 ^m 42 ^s 28.63	
Wed.	2	16 36 13.12	10.836	22 3 27.0	21.65	10 12.07	0.979	16 46 25.19	
Thur.	3	16 40 33.48	10.861	22 11 53.8	20.58	9 48.27	1.004	16 50 21.75	
Fri.	4	16 44 54.44	10.885	22 19 54.9	19.50	9 23.86	1.029	16 54 18.30	
Sat.	5	16 49 15.97	10.909	22 27 30.0	18.41	8 58.89	1.053	16 58 14.86	
Sun.	6	16 53 38.05	10.931	22 34 38.7	17.31	8 33.37	1.075	17 2 11.42	
Mon.	7	16 58 0.67	10.953	22 41 20.9	16.20	8 7.30	1.096	17 6 7.97	
Tues.	8	17 2 23.79	10.973	22 47 36.5	15.09	7 40.74	1.116	17 10 4.53	
Wed.	9	17 6 47.38	10.992	22 53 35.3	13.96	7 13.71	1.135	17 14 1.09	
Thur.	10	17 11 11.41	11.010	22 58 46.9	12.83	6 46.23	1.153	17 17 57.64	
Fri.	11	17 15 35.84	11.026	23 3 41.2	11.69	6 18.36	1.169	17 21 54.20	
Sat.	12	17 20 0.65	11.041	23 8 8.2	10.55	5 50.11	1.184	17 25 50.76	
Sun.	13	17 24 25.80	11.054	23 12 7.5	9.40	5 21.52	1.197	17 29 47.32	
Mon.	14	17 28 51.25	11.066	23 15 39.1	8.24	4 52.63	1.209	17 33 43.88	
Tues.	15	17 33 16.98	11.076	23 18 43.0	7.08	4 23.45	1.219	17 37 40.43	
Wed.	16	17 37 42.93	11.085	23 21 18.8	5.91	3 54.06	1.228	17 41 36.99	
Thur.	17	17 42 9.07	11.092	23 23 26.5	4.74	3 24.47	1.235	17 45 33.54	
Fri.	18	17 46 35.36	11.098	23 25 6.1	3.56	2 54.74	1.241	17 49 30.10	
Sat.	19	17 51 1.77	11.102	23 26 17.5	2.38	2 24.89	1.245	17 53 26.66	
Sun.	20	17 55 28.26	11.105	23 27 0.5	1.20	1 54.96	1.248	17 57 23.22	
Mon.	21	17 59 54.80	11.106	23 27 15.3	0.02	1 24.97	1.249	18 1 19.77	
Tues.	22	18 4 21.34	11.105	23 27 1.8	1.16	0 54.99	1.249	18 5 16.33	
Wed.	23	18 8 47.86	11.103	23 26 20.0	2.34	0 25.03	1.247	18 9 12.89	
Thur.	24	18 13 14.32	11.100	23 25 9.9	3.51	0 4.87	1.244	18 13 9.45	
Fri.	25	18 17 40.68	11.096	23 23 31.6	4.69	0 34.68	1.239	18 17 6.00	
Sat.	26	18 23 6.92	11.090	23 21 25.0	5.86	1 4.36	1.233	18 21 2.56	
Sun.	27	18 26 33.01	11.083	23 18 50.3	7.03	1 33.89	1.226	18 24 59.12	
Mon.	28	18 30 58.91	11.075	23 15 47.5	8.20	2 3.23	1.218	18 28 55.68	
Tues.	29	18 35 24.59	11.066	23 12 16.7	9.37	2 32.36	1.209	18 32 52.23	
Wed.	30	18 39 50.04	11.055	23 8 17.9	10.53	3 1.25	1.198	18 36 48.79	
Thur.	31	18 44 15.23	11.043	23 3 51.4	11.68	3 29.88	1.186	18 40 45.35	
Fri.	32	18 48 40.12	11.030	S. 22° 58' 57.3"	12.83	3 58.22	1.174	18 44 41.90	

NOTE. — The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S					Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal Ob.
		True LONGITUDE.		Diff. for 1 hour.	LATITUDE.				
		λ	λ'						
1	336	249° 38' 34.5	38' 0.4	152.13	—0.36	9.9936741	26.9	7 16 19.69	
2	337	250 39 26.3	38 52.1	152.19	0.26	.9936110	25.8	7 12 23.78	
3	338	251 40 19.4	39 45.0	152.23	0.14	.9935503	24.8	7 8 27.87	
4	339	252 41 13.8	40 39.2	152.28	—0.01	.9934920	23.8	7 4 31.96	
5	340	253 42 9.4	41 34.6	152.33	+0.12	.9934360	22.9	7 0 36.05	
6	341	254 43 6.2	42 31.3	152.38	0.25	.9933822	22.0	6 56 40.14	
7	342	255 44 4.2	43 29.2	152.43	0.36	.9933304	21.1	6 52 44.22	
8	343	256 45 3.3	44 28.1	152.48	0.45	.9932806	20.3	6 48 48.31	
9	344	257 46 3.6	45 28.2	152.53	0.53	.9932328	19.5	6 44 52.41	
10	345	258 47 5.1	46 29.5	152.58	0.59	.9931868	18.8	6 40 56.50	
11	346	259 48 7.6	47 31.9	152.62	0.62	.9931424	18.1	6 37 0.59	
12	347	260 49 11.1	48 35.2	152.66	0.61	.9930995	17.5	6 33 4.68	
13	348	261 50 15.5	49 39.4	152.70	0.57	.9930582	16.8	6 29 8.75	
14	349	262 51 20.6	50 44.3	152.72	0.50	.9930185	16.2	6 25 12.84	
15	350	263 52 26.3	51 49.8	152.74	0.41	.9929804	15.6	6 21 16.93	
16	351	264 53 32.6	52 56.0	152.76	0.29	.9929439	14.9	6 17 21.02	
17	352	265 54 39.3	54 2.6	152.78	0.15	.9929090	14.2	6 13 25.11	
18	353	266 55 46.4	55 9.5	152.79	+0.01	.9928758	13.5	6 9 29.20	
19	354	267 56 53.8	56 16.7	152.80	—0.13	.9928444	12.7	6 5 33.28	
20	355	268 58 1.4	57 24.1	152.81	0.26	.9928150	11.8	6 1 37.37	
21	356	269 59 9.1	58 31.7	152.81	0.37	.9927875	11.0	5 57 41.47	
22	357	270 60 16.9	59 39.3	152.82	0.47	.9927622	10.1	5 53 45.56	
23	358	272 1 24.8	0 47.0	152.82	0.55	.9927391	9.1	5 49 49.65	
24	359	273 2 32.7	1 54.7	152.82	0.60	.9927184	8.1	5 45 53.73	
25	360	274 3 40.7	3 2.5	152.82	0.61	.9927004	7.0	5 41 57.82	
26	361	275 4 48.7	4 10.4	152.83	0.60	.9926851	5.8	5 38 1.91	
27	362	276 5 56.7	5 18.3	152.83	0.56	.9926725	4.7	5 34 6.00	
28	363	277 7 4.9	6 26.3	152.83	0.49	.9926626	3.5	5 30 10.08	
29	364	278 8 13.1	7 34.3	152.83	0.40	.9926557	2.3	5 26 14.18	
30	365	279 9 21.5	8 42.5	152.84	0.29	.9926516	1.1	5 22 18.27	
31	366	280 10 30.0	9 50.9	152.84	0.17	.9926504	0.0	5 18 22.36	
32	367	281 11 38.6	10 59.3	152.85	—0.04	9.9926520	1.2	5 14 26.45	

NOTE: λ corresponds to the true equinox of the date, λ' to the mean equinox of January 0h.

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMI-DIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.			
							h m	m	
1	16 4.9	16 8.0	58 54.8	+1.02	59 5.9	+0.83	13 43.3	2.43	17.1
2	16 10.4	16 12.2	59 14.8	0.64	59 21.4	0.45	14 42.1	2.44	18.1
3	16 13.4	16 14.0	59 25.8	+0.27	59 28.0	+0.10	15 40.3	2.39	19.1
4	16 14.0	16 13.6	59 28.2	-0.06	59 26.6	-0.20	16 36.8	2.31	20.1
5	16 12.7	16 11.5	59 23.4	0.32	59 18.8	0.43	17 31.0	2.22	21.1
6	16 9.9	16 8.0	59 13.0	0.53	59 6.1	0.61	18 23.2	2.14	22.1
7	16 5.9	16 3.5	58 58.3	0.68	58 49.7	0.75	19 13.9	2.09	23.1
8	16 1.0	15 58.2	58 40.3	0.81	58 30.2	0.87	20 3.7	2.07	24.1
9	15 55.3	15 52.2	58 19.4	0.93	58 7.9	0.98	20 53.5	2.08	25.1
10	15 48.9	15 45.4	57 55.8	1.04	57 43.0	1.09	21 43.8	2.11	26.1
11	15 41.7	15 37.9	57 29.6	1.14	57 15.5	1.19	22 34.8	2.14	27.1
12	15 33.9	15 29.8	57 0.9	1.24	56 45.8	1.27	23 26.5	2.16	28.1
13	15 25.6	15 21.4	56 30.4	1.29	56 14.8	1.30	6		29.1
14	15 17.1	15 12.9	55 59.2	1.29	55 43.8	1.26	0 18.4	2.15	0.4
15	15 8.8	15 4.9	55 28.8	1.22	55 14.4	1.16	1 9.8	2.12	1.4
16	15 1.2	14 57.9	55 0.9	1.05	54 48.5	0.98	2 0.1	2.06	2.4
17	14 54.8	14 52.3	54 37.4	0.85	54 28.0	0.71	2 48.6	1.98	3.4
18	14 50.2	14 48.7	54 20.3	0.55	54 14.7	-0.38	3 35.1	1.90	4.4
19	14 47.7	14 47.4	54 11.2	-0.18	54 10.0	+0.01	4 19.9	1.83	5.4
20	14 47.8	14 48.8	54 11.4	+0.21	54 15.2	0.43	5 3.2	1.79	6.4
21	14 50.6	14 53.0	54 21.7	0.64	54 30.7	0.86	5 45.7	1.77	7.4
22	14 56.2	15 0.1	54 42.4	1.08	54 56.6	1.28	6 28.2	1.79	8.4
23	15 4.6	15 9.7	55 13.2	1.48	55 32.0	1.66	7 11.5	1.84	9.4
24	15 15.4	15 21.6	55 53.0	1.82	56 15.7	1.95	7 56.5	1.93	10.4
25	15 28.2	15 35.1	56 39.8	2.06	57 5.0	2.12	8 44.1	2.05	11.4
26	15 42.3	15 49.1	57 30.7	2.14	57 56.5	2.13	9 35.0	2.20	12.4
27	15 55.9	16 2.5	58 21.8	2.06	58 46.0	1.94	10 29.6	2.34	13.4
28	16 8.7	16 14.2	59 8.5	1.78	59 28.8	1.58	11 27.4	2.46	14.4
29	16 19.0	16 22.9	59 46.4	1.33	60 0.9	1.06	12 27.5	2.51	15.4
30	16 25.9	16 27.9	60 11.9	0.76	60 19.3	+0.46	13 28.2	2.50	16.4
31	16 28.9	16 28.9	60 23.0	+0.15	60 23.0	-0.15	14 27.6	2.43	17.4
32	16 28.0	16 26.2	60 19.6	-0.42	60 12.9	-0.67	15 24.8	2.33	18.4

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
TUESDAY 1.					THURSDAY 3.				
0	5 53 42.79	2.4863	N.19 32 3.1	2.343	0	7 54 17.56	2.5097	N.18 54 19.9	2.918
1	5 56 12.05	2.4898	19 34 19.9	2.917	1	7 56 47.67	2.5009	18 50 21.4	4.038
2	5 58 41.45	2.4912	19 36 29.2	2.090	2	7 59 17.67	2.4990	18 46 15.3	4.163
3	6 1 10.99	2.4935	19 38 30.8	1.963	3	8 1 47.56	2.4971	18 42 1.8	4.267
4	6 3 40.67	2.4968	19 40 24.7	1.835	4	8 4 17.33	2.4951	18 37 40.8	4.411
5	6 6 10.48	2.4979	19 42 11.0	1.707	5	8 6 46.97	2.4930	18 33 12.4	4.534
6	6 8 40.42	2.4990	19 43 49.6	1.579	6	8 9 16.48	2.4908	18 28 36.7	4.636
7	6 11 10.47	2.5019	19 45 20.5	1.450	7	8 11 45.87	2.4883	18 23 53.7	4.777
8	6 13 40.64	2.5038	19 46 43.6	1.320	8	8 14 15.12	2.4863	18 19 3.5	4.896
9	6 16 10.92	2.5066	19 47 59.0	1.191	9	8 16 44.23	2.4840	18 14 6.0	5.018
10	6 18 41.31	2.5072	19 49 6.5	1.060	10	8 19 13.20	2.4816	18 9 1.3	5.136
11	6 21 11.79	2.5088	19 50 6.2	0.930	11	8 21 42.02	2.4791	18 3 49.4	5.257
12	6 23 42.37	2.5103	19 50 58.1	0.799	12	8 24 10.69	2.4766	17 58 30.5	5.374
13	6 26 13.03	2.5117	19 51 42.1	0.668	13	8 26 39.21	2.4740	17 53 4.5	5.491
14	6 28 43.77	2.5130	19 52 18.3	0.537	14	8 29 7.58	2.4714	17 47 31.6	5.607
15	6 31 14.59	2.5143	19 52 46.5	0.405	15	8 31 35.78	2.4687	17 41 51.6	5.723
16	6 33 45.48	2.5154	19 53 6.9	0.273	16	8 34 3.82	2.4660	17 36 4.8	5.838
17	6 36 16.44	2.5164	19 53 19.3	0.141	17	8 36 31.69	2.4632	17 30 11.1	5.951
18	6 38 47.45	2.5173	19 53 23.8	0.009	18	8 38 59.40	2.4603	17 24 10.6	6.064
19	6 41 18.52	2.5189	19 53 20.3	0.123	19	8 41 26.93	2.4574	17 18 3.4	6.176
20	6 43 49.63	2.5189	19 53 9.0	0.236	20	8 43 54.29	2.4544	17 11 49.4	6.287
21	6 46 20.79	2.5196	19 52 49.6	0.388	21	8 46 21.48	2.4516	17 5 28.9	6.397
22	6 48 51.98	2.5201	19 52 22.4	0.521	22	8 48 48.48	2.4486	16 49 1.8	6.507
23	6 51 23.20	2.5206	N.19 51 47.2	0.664	23	8 51 15.30	2.4456	N.16 42 28.1	6.616
WEDNESDAY 2.					FRIDAY 4.				
0	6 53 54.45	2.5210	N.19 51 4.0	0.786	0	8 53 41.93	2.4434	N.16 45 48.0	6.722
1	6 56 25.72	2.5212	19 50 12.8	0.919	1	8 56 8.38	2.4392	16 39 1.4	6.829
2	6 58 57.00	2.5214	19 49 13.7	1.052	2	8 58 34.64	2.4350	16 32 8.5	6.936
3	7 1 28.28	2.5215	19 48 6.6	1.184	3	9 1 0.70	2.4328	16 25 9.3	7.039
4	7 3 59.57	2.5215	19 46 51.6	1.317	4	9 3 26.58	2.4296	16 18 3.8	7.143
5	7 6 30.86	2.5214	19 45 28.6	1.449	5	9 5 52.26	2.4263	16 10 52.2	7.245
6	7 9 2.14	2.5213	19 43 57.7	1.581	6	9 8 17.74	2.4230	16 3 34.4	7.347
7	7 11 33.40	2.5209	19 42 18.9	1.713	7	9 10 43.02	2.4197	15 56 10.5	7.447
8	7 14 4.65	2.5206	19 40 32.2	1.845	8	9 13 8.10	2.4163	15 48 40.7	7.547
9	7 16 35.87	2.5201	19 38 37.5	1.977	9	9 15 32.98	2.4130	15 41 4.9	7.645
10	7 19 7.06	2.5196	19 36 34.9	2.109	10	9 17 57.66	2.4096	15 33 23.3	7.742
11	7 21 38.21	2.5188	19 34 24.4	2.240	11	9 20 22.13	2.4062	15 25 35.9	7.838
12	7 24 9.32	2.5181	19 32 6.0	2.371	12	9 22 46.40	2.4027	15 17 42.7	7.933
13	7 26 40.38	2.5173	19 29 39.8	2.502	13	9 25 10.46	2.3993	15 9 43.9	8.027
14	7 29 11.40	2.5164	19 27 5.8	2.632	14	9 27 34.32	2.3958	15 1 39.4	8.120
15	7 31 42.35	2.5154	19 24 23.9	2.762	15	9 29 57.96	2.3923	14 53 29.4	8.212
16	7 34 13.25	2.5143	19 21 34.5	2.893	16	9 32 21.40	2.3888	14 45 13.9	8.303
17	7 36 44.07	2.5132	19 18 37.0	3.021	17	9 34 44.62	2.3853	14 36 53.0	8.393
18	7 39 14.82	2.5119	19 15 31.9	3.150	18	9 37 7.64	2.3818	14 28 26.8	8.481
19	7 41 45.50	2.5106	19 12 19.0	3.278	19	9 39 30.45	2.3783	14 19 55.3	8.569
20	7 44 16.10	2.5092	19 8 58.5	3.406	20	9 41 53.04	2.3748	14 11 18.5	8.656
21	7 46 46.61	2.5077	19 5 30.3	3.534	21	9 44 15.43	2.3713	14 2 36.6	8.740
22	7 49 17.02	2.5061	19 1 54.5	3.661	22	9 46 37.60	2.3678	13 53 49.7	8.824
23	7 51 47.34	2.5045	18 58 11.0	3.787	23	9 48 59.56	2.3643	13 44 57.8	8.907
24	7 54 17.56	2.5027	N.18 54 19.9	3.913	24	9 51 21.31	2.3607	N.13 36 1.0	8.986

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SATURDAY 5.					MONDAY 7.				
0	9 51 21.31	2.3007	N. 13° 36' 1.0	8.068	0	11 40 55.35	2.3107	N. 5° 12' 41.9	11.681
1	9 53 42.85	2.3073	13 26 59.2	9.009	1	11 43 8.23	2.3186	5 1 9.3	11.686
2	9 56 4.17	2.3038	13 17 52.7	9.148	2	11 45 20.98	2.3116	4 49 35.3	11.678
3	9 58 25.29	2.3001	13 8 41.4	9.236	3	11 47 33.61	2.3094	4 37 59.9	11.660
4	10 0 46.19	2.3056	12 59 25.5	9.303	4	11 49 46.12	2.3074	4 26 23.2	11.621
5	10 3 6.88	2.3031	12 50 5.0	9.379	5	11 51 58.50	2.3056	4 14 45.3	11.641
6	10 5 27.37	2.3098	12 40 40.0	9.464	6	11 54 10.77	2.3088	4 3 6.2	11.689
7	10 7 47.64	2.3092	12 31 10.5	9.528	7	11 56 22.93	2.3017	3 51 26.1	11.677
8	10 10 7.71	2.3077	12 21 36.6	9.600	8	11 58 34.97	2.1998	3 39 45.0	11.693
9	10 12 27.57	2.3092	12 11 58.4	9.672	9	12 0 46.91	2.1980	3 28 2.9	11.708
10	10 14 47.22	2.3056	12 2 16.0	9.742	10	12 2 58.74	2.1968	3 16 19.9	11.729
11	10 17 6.67	2.3034	11 52 29.4	9.811	11	12 5 10.47	2.1946	3 4 36.2	11.738
12	10 19 25.91	2.3190	11 42 38.8	9.879	12	12 7 22.09	2.1980	2 52 51.7	11.747
13	10 21 44.95	2.3166	11 32 44.1	9.946	13	12 9 33.62	2.1914	2 41 6.5	11.768
14	10 24 3.78	2.3129	11 22 45.4	10.011	14	12 11 45.06	2.1899	2 29 20.7	11.768
15	10 26 22.42	2.3099	11 12 42.8	10.075	15	12 13 56.41	2.1864	2 17 34.3	11.777
16	10 28 40.85	2.3058	11 2 36.4	10.138	16	12 16 7.67	2.1870	2 5 47.5	11.784
17	10 30 59.08	2.3032	10 52 26.2	10.200	17	12 18 18.84	2.1868	1 54 0.2	11.791
18	10 33 17.12	2.3090	10 42 12.4	10.260	18	12 20 29.94	2.1842	1 42 12.6	11.796
19	10 35 34.96	2.3067	10 31 55.0	10.320	19	12 22 40.95	2.1829	1 30 24.7	11.800
20	10 37 52.61	2.3035	10 21 34.0	10.378	20	12 24 51.89	2.1817	1 18 36.6	11.803
21	10 40 10.06	2.3098	10 11 9.6	10.438	21	12 27 2.75	2.1804	1 6 48.3	11.808
22	10 42 27.32	2.3061	10 0 41.8	10.491	22	12 29 13.54	2.1793	0 55 0.0	11.806
23	10 44 44.39	2.3090	N. 9° 50' 10.6	10.546	23	12 31 24.27	2.1789	N. 0° 43' 11.6	11.806
SUNDAY 6.					TUESDAY 8.				
0	10 47 1.27	2.3198	N. 9° 39' 36.3	10.599	0	12 33 34.93	2.1771	N. 0° 31' 23.4	11.804
1	10 49 17.96	2.3167	9 28 58.7	10.662	1	12 35 45.53	2.1761	0 19 35.2	11.802
2	10 51 34.47	2.3136	9 18 18.1	10.703	2	12 37 56.07	2.1761	N. 0° 7' 47.2	11.798
3	10 53 50.80	2.3106	9 7 34.4	10.753	3	12 40 6.55	2.1743	S. 0° 4' 0.6	11.794
4	10 56 6.95	2.3078	8 56 47.8	10.801	4	12 42 16.98	2.1784	0 15 48.1	11.788
5	10 58 12.92	2.3047	8 45 58.2	10.849	5	12 44 27.35	2.1738	0 27 35.2	11.793
6	11 0 38.71	2.3017	8 35 5.9	10.896	6	12 46 37.68	2.1718	0 39 21.9	11.774
7	11 2 54.33	2.3086	8 24 10.8	10.941	7	12 48 47.97	2.1711	0 51 8.1	11.766
8	11 5 9.77	2.3060	8 13 13.0	10.985	8	12 50 58.21	2.1704	1 2 53.8	11.756
9	11 7 25.05	2.3032	8 2 12.6	11.027	9	12 53 8.41	2.1697	1 14 38.8	11.744
10	11 9 40.15	2.3004	7 51 9.7	11.069	10	12 55 18.58	2.1692	1 26 23.1	11.732
11	11 11 55.09	2.3076	7 40 4.3	11.110	11	12 57 28.71	2.1686	1 38 6.6	11.719
12	11 14 9.87	2.3049	7 28 56.6	11.149	12	12 59 38.81	2.1681	1 49 49.3	11.706
13	11 16 24.48	2.3028	7 17 46.5	11.187	13	13 1 48.88	2.1677	2 1 31.2	11.690
14	11 18 38.94	2.3006	7 6 34.2	11.224	14	13 3 58.93	2.1673	2 13 12.1	11.673
15	11 20 53.24	2.3071	6 55 19.6	11.260	15	13 6 8.96	2.1669	2 24 52.0	11.656
16	11 23 7.39	2.3040	6 44 3.0	11.296	16	13 8 18.97	2.1666	2 36 30.8	11.638
17	11 25 21.39	2.3009	6 32 44.3	11.332	17	13 10 28.96	2.1663	2 48 8.5	11.619
18	11 27 35.24	2.3086	6 21 23.6	11.369	18	13 12 38.93	2.1661	2 59 45.0	11.598
19	11 29 48.94	2.3072	6 10 1.0	11.392	19	13 14 48.89	2.1660	3 11 20.3	11.577
20	11 32 2.50	2.3048	5 58 36.6	11.422	20	13 16 58.85	2.1658	3 22 54.2	11.554
21	11 34 15.92	2.3025	5 47 10.4	11.451	21	13 19 8.79	2.1657	3 34 26.8	11.530
22	11 36 29.20	2.3002	5 35 42.5	11.478	22	13 21 18.73	2.1657	3 45 57.9	11.506
23	11 38 42.34	2.3179	5 24 13.0	11.506	23	13 23 28.67	2.1657	3 57 27.5	11.480
24	11 40 55.35	2.3167	N. 5° 12' 41.9	11.531	24	13 25 38.61	2.1657	S. 4° 8' 55.5	11.453

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
WEDNESDAY 9.					FRIDAY 11.				
0	13 ^h 25 ^m 38.61	2.1667	S. 4° 8' 55.5	11.433	0	15 ^h 10 ^m 17.03	2.2041	S. 12° 29' 15.9	9.033
1	13 27 48.55	2.1668	4 20 21.9	11.436	1	15 12 29.32	2.2044	12 38 15.7	8.960
2	13 29 58.50	2.1669	4 31 46.6	11.397	2	15 14 41.68	2.2067	12 47 11.2	8.887
3	13 32 8.46	2.1660	4 43 9.5	11.367	3	15 16 54.12	2.2079	12 56 2.2	8.813
4	13 34 18.42	2.1662	4 54 30.7	11.336	4	15 19 6.63	2.2092	13 4 48.7	8.738
5	13 36 28.40	2.1664	5 5 49.9	11.306	5	15 21 19.22	2.2104	13 13 30.7	8.662
6	13 38 38.40	2.1667	5 17 7.3	11.273	6	15 23 31.89	2.2117	13 22 8.2	8.586
7	13 40 48.41	2.1670	5 28 22.6	11.238	7	15 25 44.63	2.2130	13 30 41.0	8.508
8	13 42 58.44	2.1673	5 39 35.9	11.204	8	15 27 57.45	2.2143	13 39 9.2	8.430
9	13 45 8.49	2.1677	5 50 47.1	11.168	9	15 30 10.35	2.2156	13 47 32.7	8.352
10	13 47 18.57	2.1682	6 1 56.1	11.131	10	15 32 23.32	2.2168	13 55 51.4	8.273
11	13 49 28.67	2.1688	6 13 2.8	11.093	11	15 34 36.37	2.2181	14 4 5.3	8.193
12	13 51 38.80	2.1691	6 24 7.2	11.056	12	15 36 49.49	2.2198	14 12 14.4	8.110
13	13 53 48.96	2.1696	6 35 9.3	11.016	13	15 39 2.69	2.2208	14 20 18.6	8.029
14	13 55 59.15	2.1702	6 46 9.0	10.974	14	15 41 15.96	2.2216	14 28 17.8	7.946
15	13 58 9.38	2.1708	6 57 6.2	10.933	15	15 43 29.30	2.2220	14 36 12.1	7.863
16	14 0 19.65	2.1714	7 8 1.0	10.890	16	15 45 42.72	2.2224	14 44 1.4	7.779
17	14 2 29.95	2.1721	7 18 53.1	10.847	17	15 47 56.21	2.2234	14 51 45.6	7.694
18	14 4 40.30	2.1728	7 29 42.5	10.802	18	15 50 9.77	2.2236	14 59 24.7	7.609
19	14 6 50.69	2.1735	7 40 29.3	10.756	19	15 52 23.40	2.2278	15 6 58.7	7.523
20	14 9 1.12	2.1742	7 51 13.3	10.710	20	15 54 37.11	2.2280	15 14 27.5	7.437
21	14 11 11.60	2.1750	8 1 54.5	10.662	21	15 56 50.88	2.2281	15 21 51.1	7.349
22	14 13 22.12	2.1758	8 12 32.8	10.614	22	15 59 4.72	2.2283	15 29 9.4	7.262
23	14 15 32.69	2.1767	S. 8° 23' 8.2	10.564	23	16 1 18.63	2.2284	S. 15° 36' 22.5	7.175
THURSDAY 10.					SATURDAY 12.				
0	14 17 43.32	2.1775	S. 8° 33' 40.5	10.514	0	16 3 32.61	2.2286	S. 15° 43' 30.2	7.083
1	14 19 54.00	2.1784	8 44 9.8	10.463	1	16 5 46.65	2.2246	15 50 32.5	6.993
2	14 22 4.73	2.1792	8 54 36.0	10.410	2	16 8 0.76	2.2266	15 57 29.4	6.903
3	14 24 15.52	2.1802	9 4 59.1	10.367	3	16 10 14.93	2.2267	16 4 20.8	6.812
4	14 26 26.36	2.1812	9 15 18.9	10.303	4	16 12 29.16	2.2277	16 11 6.8	6.720
5	14 28 37.26	2.1822	9 25 35.5	10.246	5	16 14 43.45	2.2287	16 17 47.3	6.628
6	14 30 48.23	2.1832	9 35 48.7	10.192	6	16 16 57.80	2.2296	16 24 22.2	6.535
7	14 32 59.25	2.1842	9 45 58.6	10.136	7	16 19 12.21	2.2406	16 30 51.5	6.442
8	14 35 10.33	2.1852	9 56 5.0	10.078	8	16 21 26.67	2.2416	16 37 15.2	6.348
9	14 37 21.48	2.1864	10 6 7.9	10.019	9	16 23 41.19	2.2424	16 43 33.2	6.253
10	14 39 32.70	2.1875	10 16 7.3	9.969	10	16 25 55.76	2.2433	16 49 45.6	6.158
11	14 41 43.98	2.1886	10 26 3.0	9.899	11	16 28 10.38	2.2441	16 55 52.3	6.063
12	14 43 55.33	2.1897	10 35 55.1	9.897	12	16 30 25.05	2.2449	17 1 53.2	5.967
13	14 46 6.75	2.1908	10 45 43.5	9.776	13	16 32 39.77	2.2467	17 7 48.4	5.871
14	14 48 18.23	2.1920	10 55 28.1	9.712	14	16 34 54.53	2.2464	17 13 37.7	5.776
15	14 50 29.79	2.1932	11 5 8.9	9.648	15	16 37 9.34	2.2471	17 19 21.2	5.679
16	14 52 41.41	2.1942	11 14 45.8	9.583	16	16 39 24.19	2.2478	17 24 58.8	5.578
17	14 54 53.11	2.1954	11 24 18.8	9.517	17	16 41 39.08	2.2486	17 30 30.6	5.486
18	14 57 4.88	2.1967	11 33 47.9	9.451	18	16 43 54.01	2.2491	17 35 56.4	5.391
19	14 59 16.72	2.1979	11 43 12.9	9.383	19	16 46 8.97	2.2497	17 41 16.3	5.293
20	15 1 28.63	2.1992	11 52 33.9	9.316	20	16 48 23.97	2.2502	17 46 30.3	5.193
21	15 3 40.62	2.2004	12 1 50.7	9.245	21	16 50 39.00	2.2507	17 51 38.2	5.093
22	15 5 52.68	2.2016	12 11 3.4	9.176	22	16 53 54.05	2.2512	17 56 40.2	4.992
23	15 8 4.81	2.2029	12 20 11.8	9.106	23	16 55 9.14	2.2518	18 1 36.1	4.892
24	15 10 17.03	2.2041	S. 12° 29' 15.9	9.033	24	16 57 24.25	2.2520	S. 18° 6' 26.0	4.791

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SUNDAY 13.					TUESDAY 15.				
0	16 57 24.25	2.2690	8.18 6 26.0	4.781	0	18 45 6.40	2.2174	8.19 55 55.2	0.329
1	16 59 30.38	2.2694	18 11 9.8	4.679	1	18 47 19.39	2.2166	19 55 38.4	0.231
2	17 1 54.54	2.2697	18 15 47.5	4.577	2	18 49 32.27	2.2158	19 55 15.5	0.433
3	17 4 9.71	2.2690	18 20 19.1	4.476	3	18 51 45.03	2.2116	19 54 46.4	0.535
4	17 6 24.89	2.2692	18 24 44.6	4.373	4	18 53 57.67	2.2066	19 54 11.2	0.636
5	17 8 40.09	2.2684	18 29 3.9	4.270	5	18 56 10.19	2.2076	19 53 30.0	0.738
6	17 10 55.30	2.2686	18 33 17.0	4.167	6	18 58 22.58	2.2068	19 52 42.7	0.839
7	17 13 10.51	2.2686	18 37 23.9	4.064	7	19 0 34.85	2.2084	19 51 49.4	0.939
8	17 15 25.73	2.2687	18 41 24.7	3.961	8	19 2 46.99	2.2012	19 50 50.0	1.040
9	17 17 40.95	2.2687	18 45 19.3	3.857	9	19 4 59.00	2.1990	19 49 44.6	1.140
10	17 19 56.17	2.2687	18 49 7.6	3.753	10	19 7 10.87	2.1968	19 48 33.2	1.239
11	17 22 11.39	2.2686	18 52 49.7	3.649	11	19 9 22.61	2.1946	19 47 15.9	1.338
12	17 24 26.61	2.2686	18 56 25.5	3.545	12	19 11 34.21	2.1922	19 45 52.6	1.437
13	17 26 41.82	2.2685	18 59 55.1	3.441	13	19 13 45.67	2.1898	19 44 23.4	1.536
14	17 28 57.01	2.2681	19 3 18.4	3.336	14	19 15 56.99	2.1874	19 42 48.4	1.635
15	17 31 12.19	2.2679	19 6 35.4	3.231	15	19 18 8.16	2.1849	19 41 7.4	1.731
16	17 33 27.36	2.2676	19 9 46.1	3.124	16	19 20 19.18	2.1825	19 39 20.6	1.828
17	17 35 42.50	2.2672	19 12 50.5	3.021	17	19 22 30.06	2.1800	19 37 28.0	1.924
18	17 37 57.62	2.2618	19 15 48.6	2.916	18	19 24 40.78	2.1776	19 35 29.6	2.022
19	17 40 12.72	2.2613	19 18 40.5	2.811	19	19 26 51.35	2.1749	19 33 25.4	2.118
20	17 42 27.78	2.2609	19 21 26.0	2.706	20	19 29 1.77	2.1723	19 31 15.5	2.213
21	17 44 42.82	2.2606	19 24 5.2	2.600	21	19 31 12.03	2.1697	19 28 59.9	2.308
22	17 46 57.82	2.2497	19 26 38.0	2.496	22	19 33 22.13	2.1670	19 26 38.5	2.403
23	17 49 12.79	2.2491	8.19 29 4.5	2.389	23	19 35 32.07	2.1643	8.19 24 11.5	2.498
MONDAY 14.					WEDNESDAY 16.				
0	17 51 27.72	2.2484	8.19 31 24.7	2.283	0	19 37 41.85	2.1616	8.19 21 38.8	2.591
1	17 53 42.60	2.2477	19 33 38.5	2.178	1	19 39 51.46	2.1669	19 19 0.6	2.683
2	17 55 57.44	2.2469	19 35 46.0	2.072	2	19 42 0.91	2.1661	19 16 16.8	2.776
3	17 58 12.23	2.2460	19 37 47.2	1.966	3	19 44 10.20	2.1633	19 13 27.4	2.868
4	18 0 26.96	2.2461	19 39 42.0	1.861	4	19 46 19.31	2.1606	19 10 32.6	2.960
5	18 2 41.65	2.2449	19 41 30.5	1.755	5	19 48 28.26	2.1477	19 7 32.2	3.051
6	18 4 56.27	2.2432	19 43 12.7	1.649	6	19 50 37.04	2.1448	19 4 26.4	3.142
7	18 7 10.83	2.2423	19 44 48.5	1.544	7	19 52 45.64	2.1419	19 1 15.2	3.232
8	18 9 25.33	2.2411	19 46 18.0	1.438	8	19 54 54.07	2.1390	18 57 58.6	3.322
9	18 11 39.77	2.2400	19 47 41.2	1.334	9	19 57 2.33	2.1361	18 54 36.6	3.411
10	18 13 54.13	2.2386	19 48 58.0	1.228	10	19 59 10.41	2.1332	18 51 9.3	3.500
11	18 16 8.43	2.2376	19 50 8.6	1.123	11	20 1 18.31	2.1302	18 47 36.7	3.588
12	18 18 22.65	2.2368	19 51 12.8	1.018	12	20 3 26.03	2.1272	18 43 58.8	3.676
13	18 20 36.79	2.2360	19 52 10.7	0.913	13	20 5 33.58	2.1242	18 40 15.7	3.763
14	18 22 50.85	2.2356	19 53 2.4	0.808	14	20 7 40.94	2.1212	18 36 27.4	3.848
15	18 25 4.83	2.2342	19 53 47.7	0.704	15	20 9 48.13	2.1182	18 32 33.9	3.934
16	18 27 18.72	2.2307	19 54 26.8	0.600	16	20 11 55.13	2.1162	18 28 35.2	4.020
17	18 29 32.50	2.2292	19 54 59.6	0.496	17	20 14 1.95	2.1121	18 24 31.5	4.104
18	18 31 46.23	2.2277	19 55 26.2	0.391	18	20 16 8.58	2.1091	18 20 22.7	4.188
19	18 33 59.84	2.2261	19 55 46.6	0.287	19	20 18 15.03	2.1060	18 16 8.9	4.272
20	18 36 13.36	2.2244	19 56 0.7	0.183	20	20 20 21.30	2.1029	18 11 50.1	4.356
21	18 38 26.78	2.2227	19 56 8.6	0.080	21	20 22 27.38	2.0998	18 7 26.3	4.438
22	18 40 40.09	2.2210	19 56 10.3	0.028	22	20 24 33.28	2.0967	18 2 57.5	4.520
23	18 42 53.30	2.2192	19 56 5.8	0.126	23	20 26 38.99	2.0936	17 58 23.9	4.601
24	18 45 6.40	2.2174	8.19 55 55.2	0.220	24	20 28 44.51	2.0906	8.17 53 45.4	4.682

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
THURSDAY 17.					SATURDAY 19.				
0	^h 20 ^m 28 ^s 44.51	2.0905	S. 17° 53' 45.4"	4.082	0	^h 22 ^m 5 ^s 35.29	1.9605	S. 12° 47' 20.3"	7.866
1	20 30 49.84	2.0874	17 49 2.0	4.762	1	22 7 32.25	1.9481	12 39 27.3	7.908
2	20 32 54.99	2.0842	17 44 13.9	4.842	2	22 9 29.07	1.9458	12 31 31.3	7.949
3	20 34 59.95	2.0811	17 39 21.0	4.921	3	22 11 25.75	1.9434	12 23 32.2	8.010
4	20 37 4.73	2.0780	17 34 23.4	4.999	4	22 13 22.29	1.9412	12 15 30.1	8.080
5	20 39 9.31	2.0749	17 29 21.1	5.077	5	22 15 18.69	1.9389	12 7 25.0	8.110
6	20 41 13.71	2.0717	17 24 14.2	5.154	6	22 17 14.96	1.9367	11 59 16.9	8.160
7	20 43 17.91	2.0686	17 19 2.7	5.230	7	22 19 11.09	1.9345	11 51 6.0	8.207
8	20 45 21.93	2.0654	17 13 46.6	5.306	8	22 21 7.09	1.9323	11 42 52.1	8.255
9	20 47 25.76	2.0623	17 8 26.0	5.381	9	22 23 2.97	1.9302	11 34 35.4	8.302
10	20 49 29.41	2.0592	17 3 0.8	5.456	10	22 24 58.72	1.9281	11 26 15.9	8.348
11	20 51 32.86	2.0560	16 57 31.2	5.530	11	22 26 54.35	1.9261	11 17 53.6	8.394
12	20 53 36.13	2.0529	16 51 57.2	5.604	12	22 28 49.86	1.9241	11 9 28.5	8.440
13	20 55 39.21	2.0498	16 46 18.8	5.677	13	22 30 45.24	1.9221	11 1 0.7	8.486
14	20 57 42.11	2.0467	16 40 36.0	5.750	14	22 32 40.51	1.9202	10 52 30.3	8.530
15	20 59 44.82	2.0436	16 34 48.8	5.822	15	22 34 35.67	1.9183	10 43 57.2	8.574
16	21 1 47.34	2.0405	16 28 57.4	5.893	16	22 36 30.71	1.9165	10 35 21.4	8.617
17	21 3 49.68	2.0374	16 23 1.7	5.963	17	22 38 25.64	1.9146	10 26 43.1	8.660
18	21 5 51.83	2.0343	16 17 1.7	6.033	18	22 40 20.47	1.9129	10 18 2.2	8.702
19	21 7 53.80	2.0313	16 10 57.6	6.103	19	22 42 15.19	1.9112	10 9 18.8	8.744
20	21 9 55.59	2.0282	16 4 49.4	6.173	20	22 44 9.81	1.9096	10 0 32.9	8.786
21	21 11 57.19	2.0252	15 58 37.0	6.240	21	22 46 4.33	1.9078	9 51 44.6	8.828
22	21 13 58.61	2.0222	15 52 20.6	6.307	22	22 47 58.75	1.9062	9 42 53.8	8.866
23	21 15 59.85	2.0191	S. 15° 46' 0.1"	6.374	23	22 49 53.07	1.9046	S. 9° 34' 0.7"	8.906
FRIDAY 18.					SUNDAY 20.				
0	21 18 0.91	2.0162	S. 15° 39' 35.6"	6.441	0	22 51 47.30	1.9031	S. 9° 25' 5.2"	8.944
1	21 20 1.79	2.0132	15 33 7.2	6.507	1	22 53 41.44	1.9016	9 16 7.4	8.983
2	21 22 2.49	2.0102	15 26 34.8	6.572	2	22 55 35.50	1.9002	9 7 7.2	9.021
3	21 24 3.02	2.0073	15 19 58.5	6.637	3	22 57 29.47	1.8988	8 58 4.8	9.059
4	21 26 3.37	2.0043	15 13 18.4	6.701	4	22 59 23.36	1.8976	8 49 0.2	9.096
5	21 28 3.54	2.0014	15 6 34.4	6.764	5	23 1 17.17	1.8962	8 39 53.3	9.132
6	21 30 3.54	1.9985	14 59 46.7	6.827	6	23 3 10.90	1.8950	8 30 44.3	9.168
7	21 32 3.37	1.9967	14 52 55.2	6.889	7	23 5 4.56	1.8938	8 21 33.1	9.204
8	21 34 3.02	1.9938	14 46 0.0	6.951	8	23 6 58.15	1.8926	8 12 19.8	9.238
9	21 36 2.51	1.9900	14 39 1.1	7.012	9	23 8 51.67	1.8915	8 3 4.5	9.273
10	21 38 1.82	1.9872	14 31 58.6	7.073	10	23 10 45.13	1.8904	7 53 47.1	9.307
11	21 40 0.97	1.9844	14 24 52.5	7.133	11	23 12 38.52	1.8894	7 44 27.7	9.340
12	21 41 59.95	1.9816	14 17 42.7	7.191	12	23 14 31.85	1.8884	7 35 6.4	9.373
13	21 43 58.77	1.9789	14 10 29.5	7.250	13	23 16 25.13	1.8875	7 25 43.1	9.405
14	21 45 57.42	1.9762	14 3 12.7	7.308	14	23 18 18.35	1.8866	7 16 17.8	9.437
15	21 47 55.91	1.9735	13 55 52.5	7.365	15	23 20 11.52	1.8858	7 6 50.6	9.468
16	21 49 54.24	1.9708	13 48 28.9	7.422	16	23 22 4.64	1.8850	6 57 21.6	9.499
17	21 51 52.41	1.9682	13 41 1.8	7.479	17	23 23 57.72	1.8843	6 47 50.8	9.529
18	21 53 50.42	1.9656	13 33 31.4	7.535	18	23 25 50.75	1.8836	6 38 18.1	9.559
19	21 55 48.28	1.9630	13 25 57.6	7.590	19	23 27 43.75	1.8830	6 28 43.7	9.588
20	21 57 45.98	1.9604	13 18 20.6	7.644	20	23 29 36.71	1.8824	6 19 7.5	9.617
21	21 59 43.53	1.9579	13 10 40.3	7.696	21	23 31 29.63	1.8818	6 9 29.6	9.645
22	22 1 40.93	1.9554	13 2 56.8	7.752	22	23 33 22.53	1.8814	5 59 50.1	9.673
23	22 3 38.18	1.9530	12 55 10.1	7.804	23	23 35 15.40	1.8809	5 50 8.9	9.700
24	22 5 35.29	1.9505	S. 12° 47' 20.3"	7.856	24	23 37 8.24	1.8806	S. 5° 40' 26.2"	9.726

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
MONDAY 21.					WEDNESDAY 23.				
0	23 37 8.24	1.8805	S. 5° 40' 26.2	9.726	0	1 7 59.03	1.9261	N. 2° 27' 1.0	10.371
1	23 39 1.06	1.8803	5 30 41.8	9.752	1	1 9 54.67	1.9264	2 37 23.2	10.370
2	23 40 53.87	1.8799	5 20 55.9	9.778	2	1 11 50.45	1.9268	2 47 45.4	10.368
3	23 42 46.66	1.8797	5 11 8.4	9.803	3	1 13 46.37	1.9283	2 58 7.4	10.366
4	23 44 39.43	1.8795	5 1 19.5	9.828	4	1 15 42.44	1.9268	3 8 29.3	10.363
5	23 46 32.20	1.8794	4 51 29.1	9.852	5	1 17 38.66	1.9284	3 18 51.0	10.360
6	23 48 24.96	1.8793	4 41 37.3	9.875	6	1 19 35.04	1.9410	3 29 12.5	10.355
7	23 50 17.72	1.8793	4 31 44.1	9.898	7	1 21 31.58	1.9436	3 39 33.7	10.350
8	23 52 10.48	1.8794	4 21 49.5	9.921	8	1 23 28.28	1.9464	3 49 54.6	10.345
9	23 54 3.25	1.8795	4 11 53.6	9.942	9	1 25 25.15	1.9492	4 0 15.1	10.339
10	23 55 56.02	1.8796	4 1 56.4	9.963	10	1 27 22.18	1.9520	4 10 35.3	10.332
11	23 57 48.80	1.8798	3 51 58.0	9.984	11	1 29 19.39	1.9549	4 20 55.0	10.324
12	23 59 41.60	1.8801	3 41 58.3	10.005	12	1 31 16.77	1.9579	4 31 14.3	10.316
13	0 1 34.41	1.8804	3 31 57.4	10.026	13	1 33 14.33	1.9609	4 41 33.0	10.307
14	0 3 27.25	1.8807	3 21 55.3	10.044	14	1 35 12.08	1.9640	4 51 51.2	10.297
15	0 5 20.10	1.8811	3 11 52.0	10.063	15	1 37 10.02	1.9671	5 2 8.7	10.287
16	0 7 12.96	1.8816	3 1 47.7	10.082	16	1 39 8.14	1.9703	5 12 25.6	10.276
17	0 9 5.89	1.8831	2 51 42.3	10.099	17	1 41 6.46	1.9736	5 22 41.8	10.264
18	0 10 58.83	1.8837	2 41 35.8	10.116	18	1 43 4.97	1.9769	5 32 57.3	10.261
19	0 12 51.81	1.8838	2 31 28.3	10.133	19	1 45 3.68	1.9803	5 43 11.9	10.257
20	0 14 44.83	1.8840	2 21 19.8	10.149	20	1 47 2.60	1.9837	5 53 25.8	10.253
21	0 16 37.89	1.8847	2 11 10.4	10.165	21	1 49 1.72	1.9871	6 3 38.7	10.248
22	0 18 30.99	1.8855	2 1 0.0	10.180	22	1 51 1.06	1.9907	6 13 50.7	10.192
23	0 20 24.15	1.8864	S. 1° 50' 48.8	10.194	23	1 53 0.61	1.9945	N. 6° 24' 1.8	10.176
TUESDAY 22.					THURSDAY 24.				
0	0 23 17.35	1.8873	S. 1° 40' 36.8	10.208	0	1 55 0.37	1.9979	N. 6° 34' 11.8	10.158
1	0 24 10.61	1.8893	1 30 23.9	10.221	1	1 57 0.36	2.0016	6 44 20.7	10.140
2	0 26 3.93	1.8892	1 20 10.2	10.234	2	1 59 0.57	2.0064	6 54 28.6	10.121
3	0 27 57.32	1.8893	1 9 55.8	10.247	3	2 1 1.00	2.0092	7 4 35.3	10.101
4	0 29 50.77	1.8916	0 59 40.6	10.266	4	2 3 1.67	2.0130	7 14 40.7	10.080
5	0 31 44.30	1.8927	0 49 24.8	10.280	5	2 5 2.57	2.0170	7 24 44.9	10.069
6	0 33 37.89	1.8930	0 39 8.3	10.290	6	2 7 3.70	2.0209	7 34 47.8	10.057
7	0 35 31.57	1.8962	0 28 51.1	10.290	7	2 9 5.08	2.0240	7 44 49.4	10.013
8	0 37 25.32	1.8966	0 18 33.4	10.300	8	2 11 6.69	2.0280	7 54 49.5	9.989
9	0 39 19.16	1.8980	S. 0° 8' 15.2	10.309	9	2 13 8.56	2.0331	8 4 48.1	9.966
10	0 41 13.09	1.8995	N. 0° 2' 3.6	10.317	10	2 15 10.67	2.0373	8 14 45.2	9.939
11	0 43 7.11	1.9011	0 12 22.9	10.325	11	2 17 13.03	2.0415	8 24 40.8	9.912
12	0 45 1.21	1.9026	0 22 42.6	10.332	12	2 19 15.65	2.0458	8 34 34.7	9.886
13	0 46 55.41	1.9043	0 33 2.7	10.339	13	2 21 18.53	2.0501	8 44 27.0	9.866
14	0 48 49.72	1.9069	0 43 23.2	10.344	14	2 23 21.66	2.0546	8 54 17.5	9.877
15	0 50 44.13	1.9077	0 53 44.1	10.349	15	2 25 25.06	2.0589	9 4 6.2	9.797
16	0 52 38.64	1.9095	1 4 5.2	10.355	16	2 27 28.73	2.0634	9 13 53.1	9.768
17	0 54 33.27	1.9114	1 14 26.7	10.360	17	2 29 32.67	2.0679	9 23 38.1	9.733
18	0 56 28.01	1.9133	1 24 48.3	10.363	18	2 31 36.88	2.0726	9 33 21.1	9.700
19	0 58 22.87	1.9153	1 35 10.2	10.365	19	2 33 41.36	2.0771	9 43 2.1	9.666
20	1 0 17.85	1.9173	1 45 32.2	10.368	20	2 35 46.13	2.0817	9 52 41.1	9.631
21	1 2 12.95	1.9194	1 55 54.3	10.370	21	2 37 51.17	2.0864	10 2 17.9	9.595
22	1 4 8.18	1.9216	2 6 16.5	10.370	22	2 39 56.50	2.0912	10 11 52.6	9.560
23	1 6 3.54	1.9238	2 16 38.8	10.371	23	2 42 2.12	2.0960	10 21 25.0	9.521
24	1 7 59.03	1.9261	N. 2° 27' 1.0	10.371	24	2 44 8.03	2.1009	N. 10° 30' 55.1	9.483

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
FRIDAY 25.					SUNDAY 27.				
0	2 44 8.03	2.1009	N.10° 30' 55.1	9.483	0	4 31 9.70	2.3649	N.17° 0' 44.3	6.317
1	2 46 14.23	2.1087	10 40 22.8	9.443	1	4 33 31.76	2.3708	17 7 0.5	6.222
2	2 48 20.72	2.1107	10 49 48.1	9.401	2	4 35 54.16	2.3761	17 13 11.0	6.136
3	2 50 27.51	2.1157	10 59 10.9	9.369	3	4 38 16.89	2.3816	17 19 15.7	6.029
4	2 52 34.60	2.1207	11 8 31.2	9.316	4	4 40 39.96	2.3872	17 25 14.5	5.931
5	2 54 41.99	2.1257	11 17 48.9	9.273	5	4 43 3.35	2.3928	17 31 7.4	5.831
6	2 56 49.68	2.1308	11 27 3.9	9.228	6	4 45 27.07	2.3981	17 36 54.3	5.731
7	2 58 57.68	2.1369	11 36 16.2	9.183	7	4 47 51.12	2.4036	17 42 35.1	5.629
8	3 1 5.99	2.1411	11 45 25.7	9.138	8	4 50 15.49	2.4088	17 48 9.7	5.525
9	3 3 14.61	2.1463	11 54 32.4	9.087	9	4 52 40.18	2.4142	17 53 38.1	5.421
10	3 5 23.55	2.1516	12 3 36.1	9.037	10	4 55 5.19	2.4195	17 59 0.2	5.316
11	3 7 32.80	2.1568	12 12 36.9	8.987	11	4 57 30.52	2.4247	18 4 16.0	5.209
12	3 9 42.37	2.1621	12 21 34.6	8.936	12	4 59 56.17	2.4299	18 9 25.3	5.101
13	3 11 52.26	2.1675	12 30 29.2	8.888	13	5 2 22.11	2.4351	18 14 28.1	4.993
14	3 14 2.47	2.1728	12 39 20.6	8.830	14	5 4 48.37	2.4401	18 19 24.4	4.883
15	3 16 13.00	2.1782	12 48 8.8	8.775	15	5 7 14.93	2.4452	18 24 14.1	4.772
16	3 18 23.86	2.1837	12 56 53.6	8.719	16	5 9 41.80	2.4503	18 28 57.0	4.660
17	3 20 35.04	2.1891	13 5 35.1	8.663	17	5 12 8.96	2.4552	18 33 33.2	4.546
18	3 22 46.55	2.1946	13 14 13.1	8.606	18	5 14 36.42	2.4601	18 38 2.6	4.432
19	3 24 58.40	2.2001	13 22 47.6	8.548	19	5 17 4.18	2.4649	18 42 25.1	4.317
20	3 27 10.57	2.2057	13 31 18.6	8.489	20	5 19 32.22	2.4697	18 46 40.7	4.201
21	3 29 23.08	2.2113	13 39 45.9	8.424	21	5 22 0.54	2.4744	18 50 49.2	4.084
22	3 31 35.92	2.2168	13 48 9.5	8.361	22	5 24 29.15	2.4791	18 54 50.7	3.965
23	3 33 49.10	2.2225	N.13° 56' 29.3	8.296	23	5 26 58.04	2.4837	N.18° 58' 45.1	3.846
SATURDAY 26.					MONDAY 28.				
0	3 36 2.63	2.2281	N.14° 4' 45.1	8.233	0	5 29 27.20	2.4881	N.19° 2' 32.2	3.726
1	3 38 16.48	2.2337	14 12 57.1	8.166	1	5 31 56.62	2.4925	19 6 12.1	3.604
2	3 40 30.68	2.2394	14 21 5.1	8.099	2	5 34 26.30	2.4969	19 9 44.7	3.482
3	3 42 45.21	2.2451	14 29 9.0	8.031	3	5 36 56.25	2.5012	19 13 10.0	3.360
4	3 45 0.09	2.2508	14 37 8.8	7.961	4	5 39 26.45	2.5054	19 16 27.8	3.235
5	3 47 15.31	2.2565	14 45 4.4	7.890	5	5 41 56.90	2.5096	19 19 38.2	3.110
6	3 49 30.87	2.2622	14 52 55.7	7.818	6	5 44 27.59	2.5136	19 22 41.0	2.984
7	3 51 46.77	2.2679	15 0 42.6	7.745	7	5 46 58.52	2.5176	19 25 36.3	2.856
8	3 54 3.01	2.2736	15 8 25.1	7.671	8	5 49 29.69	2.5214	19 28 24.0	2.730
9	3 56 19.60	2.2794	15 16 3.1	7.595	9	5 52 1.09	2.5252	19 31 4.0	2.602
10	3 58 36.54	2.2851	15 23 36.5	7.518	10	5 54 32.71	2.5289	19 33 36.2	2.473
11	4 0 53.82	2.2909	15 31 5.3	7.440	11	5 57 4.56	2.5325	19 36 0.7	2.343
12	4 3 11.44	2.2966	15 38 29.4	7.361	12	5 59 36.62	2.5360	19 38 17.4	2.213
13	4 5 29.41	2.3023	15 45 48.7	7.281	13	6 2 8.89	2.5395	19 40 26.2	2.081
14	4 7 47.72	2.3081	15 53 3.1	7.200	14	6 4 41.36	2.5428	19 42 27.2	1.949
15	4 10 6.38	2.3138	16 0 12.6	7.118	15	6 7 14.02	2.5460	19 44 20.2	1.816
16	4 12 25.38	2.3196	16 7 17.1	7.033	16	6 9 46.88	2.5492	19 46 5.2	1.683
17	4 14 44.72	2.3253	16 14 16.5	6.947	17	6 12 19.92	2.5522	19 47 42.2	1.549
18	4 17 4.41	2.3310	16 21 10.8	6.861	18	6 14 53.14	2.5551	19 49 11.1	1.415
19	4 19 24.44	2.3367	16 27 59.9	6.773	19	6 17 26.54	2.5579	19 50 32.0	1.280
20	4 21 44.81	2.3424	16 34 43.7	6.685	20	6 20 0.10	2.5607	19 51 44.7	1.144
21	4 24 5.53	2.3480	16 41 22.1	6.595	21	6 22 33.82	2.5633	19 52 49.3	1.008
22	4 26 26.58	2.3537	16 47 55.0	6.503	22	6 25 7.69	2.5658	19 53 45.7	0.872
23	4 28 47.97	2.3593	16 54 22.4	6.411	23	6 27 41.72	2.5683	19 54 33.9	0.734
24	4 31 9.70	2.3649	N.17° 0' 44.3	6.317	24	6 30 15.88	2.5706	N.19° 55' 13.8	0.597

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
-------	------------------	-------------------	--------------	-------------------	-------	------------------	-------------------	--------------	-------------------

TUESDAY 29.

0	h m s	"	N.19° 55' 13.8	"
1	6 30 15.88	2.5708	19 55 45.5	0.459
2	6 32 50.18	2.5727	19 56 8.9	0.320
3	6 35 24.61	2.5746	19 56 24.0	0.193
4	6 37 59.16	2.5768	19 56 30.7	0.043
5	6 40 33.83	2.5797	19 56 29.1	0.097
6	6 43 8.60	2.5806	19 56 19.1	0.286
7	6 45 43.48	2.5831	19 56 0.7	0.376
8	6 48 18.46	2.5866	19 55 34.0	0.516
9	6 50 53.52	2.5880	19 54 58.8	0.656
10	6 53 28.66	2.5903	19 54 15.3	0.796
11	6 56 3.88	2.5975	19 53 23.3	0.937
12	6 58 39.17	2.5986	19 52 22.7	1.078
13	7 1 14.51	2.5996	19 51 13.8	1.219
14	7 3 49.91	2.6004	19 49 56.5	1.360
15	7 6 25.36	2.6012	19 48 30.7	1.500
16	7 9 0.85	2.6016	19 46 56.5	1.640
17	7 11 36.38	2.5923	19 45 13.8	1.781
18	7 14 11.93	2.5927	19 43 22.7	1.922
19	7 16 47.50	2.5930	19 41 23.2	2.063
20	7 19 23.09	2.5932	19 39 15.3	2.202
21	7 21 58.69	2.5933	19 36 59.0	2.343
22	7 24 34.28	2.5932	19 34 34.2	2.482
23	7 27 9.87	2.5930	N.19 32 1.1	2.622
24	7 29 45.44	2.5927		

WEDNESDAY 30.

0	7 32 20.99	2.5923	N.19 29 19.7	2.761
1	7 34 56.51	2.5918	19 26 29.9	2.900
2	7 37 32.00	2.5912	19 23 31.8	3.038
3	7 40 7.45	2.5904	19 20 25.3	3.177
4	7 42 42.86	2.5896	19 17 10.5	3.316
5	7 45 18.21	2.5887	19 13 47.5	3.452
6	7 47 53.50	2.5876	19 10 16.3	3.589
7	7 50 28.73	2.5863	19 6 36.9	3.725
8	7 53 3.88	2.5852	19 2 49.3	3.861
9	7 55 38.96	2.5839	18 58 53.5	3.996
10	7 58 13.95	2.5824	18 54 49.7	4.131
11	8 0 48.85	2.5808	18 50 37.8	4.266
12	8 3 23.65	2.5792	18 46 17.8	4.399
13	8 5 58.35	2.5774	18 41 49.9	4.533
14	8 8 32.94	2.5756	18 37 14.0	4.664
15	8 11 7.42	2.5737	18 32 30.1	4.795
16	8 13 41.78	2.5716	18 27 38.4	4.927
17	8 16 16.02	2.5696	18 22 38.9	5.057
18	8 18 50.13	2.5673	18 17 31.6	5.186
19	8 21 24.10	2.5649	18 12 16.5	5.315
20	8 23 57.93	2.5626	18 6 53.8	5.442
21	8 26 31.61	2.5601	18 1 23.5	5.569
22	8 29 5.14	2.5575	17 55 45.5	5.695
23	8 31 38.52	2.5549	17 50 0.1	5.820
24	8 34 11.73	2.5521	N.17 44 7.2	5.944

THURSDAY 31.

0	h m s	"	N.17° 44' 7.2	"
1	8 34 11.73	2.5521	17 38 6.9	6.067
2	8 36 44.78	2.5494	17 31 59.2	6.189
3	8 39 17.65	2.5464	17 25 44.2	6.310
4	8 41 50.36	2.5434	17 19 21.9	6.430
5	8 44 22.88	2.5406	17 12 52.5	6.549
6	8 46 55.22	2.5374	17 6 16.0	6.667
7	8 49 27.37	2.5343	16 59 32.5	6.784
8	8 51 59.33	2.5311	16 52 41.9	6.900
9	8 54 31.10	2.5278	16 45 44.5	7.015
10	8 57 2.67	2.5244	16 38 40.2	7.128
11	8 59 34.04	2.5210	16 31 29.1	7.241
12	9 2 5.20	2.5176	16 24 11.3	7.352
13	9 4 36.15	2.5140	16 16 46.9	7.462
14	9 7 6.89	2.5105	16 9 15.9	7.571
15	9 9 37.41	2.5069	16 1 38.4	7.679
16	9 12 7.71	2.5032	15 53 54.4	7.786
17	9 14 37.80	2.4996	15 46 4.1	7.890
18	9 17 7.66	2.4968	15 38 7.6	7.994
19	9 19 37.29	2.4930	15 30 4.8	8.097
20	9 22 6.70	2.4891	15 21 55.9	8.199
21	9 24 35.87	2.4842	15 13 41.0	8.299
22	9 27 4.81	2.4803	15 5 20.1	8.398
23	9 29 33.51	2.4764	N.14 56 53.3	8.496
24	9 32 1.97	2.4724		

FRIDAY, JANUARY 1.

0	9 34 30.20	2.4684	N.14 48 20.7	8.592
---	------------	--------	--------------	-------

PHASES OF THE MOON.

☾ Last Quarter, . . .	d h m	6 9 34.0
● New Moon, . . .	13 13 33.3	
☽ First Quarter, . . .	21 16 27.9	
○ Full Moon, . . .	29 1 47.6	

☾ Perigee,	d h	3 19.3
☾ Apogee,	19 11.5	
☾ Perigee,	31 6.1	

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Dist.	III ^b .	P. L. of Dist.	V ^b .	P. L. of Dist.	IX ^b .	P. L. of Dist.
1	α Pegasi W.	97° 45' 36"	2647	99° 23' 27"	2645	101° 1' 21"	2643	102° 39' 18"	2641
	Jupiter W.	84 7 29	2616	85 53 7	2609	87 38 54	2602	89 24 50	2597
	α Arietis W.	54 16 30	2633	55 56 57	2618	57 37 45	2603	59 18 54	2590
	Aldebaran W.	20 32 42	2511	22 18 26	2504	22 4 19	2296	25 50 21	2283
	Regulus E.	59 36 21	2309	57 50 35	2303	56 4 40	2297	54 18 36	2291
	Mars E.	60 19 19	2415	58 36 6	2408	56 52 43	2402	55 9 11	2396
2	Jupiter W.	98 16 21	2274	100 2 58	2273	101 49 39	2269	103 36 24	2265
	α Arietis W.	67 48 45	2440	69 31 23	2433	71 14 12	2426	72 57 9	2419
	Aldebaran W.	34 42 26	2270	36 29 10	2266	38 16 0	2263	40 2 55	2260
	Regulus E.	45 26 20	2268	43 39 34	2264	41 52 42	2260	40 5 46	2259
	Mars E.	46 29 32	2371	44 45 16	2368	43 0 56	2365	41 16 31	2363
	Spica E.	99 11 51	2297	97 25 47	2294	95 39 38	2290	93 53 24	2288
	Venus E.	110 41 4	2661	109 3 32	2657	107 25 55	2654	105 48 13	2651
3	α Arietis W.	81 33 43	2401	83 17 16	2400	85 0 51	2399	86 44 27	2397
	Aldebaran W.	48 58 21	2251	50 45 33	2250	52 32 45	2250	54 19 58	2250
	Spica E.	85 1 26	2279	83 14 56	2279	81 28 26	2279	79 41 56	2279
	Venus E.	97 38 53	2642	96 0 55	2641	94 22 56	2641	92 44 57	2641
	SUN E.	134 42 56	2600	133 4 1	2598	131 25 3	2596	129 46 3	2595
4	α Arietis W.	95 22 29	2404	97 5 58	2405	98 49 24	2410	100 32 45	2414
	Aldebaran W.	63 15 56	2254	65 3 3	2255	66 50 9	2257	68 37 11	2259
	Pollux W.	21 3 15	2674	22 40 16	2620	24 18 44	2675	25 58 12	2540
	Spica E.	70 49 40	2298	69 3 20	2298	67 17 3	1291	65 30 50	2294
	Venus E.	84 35 11	2646	82 57 18	2648	81 19 28	2641	79 41 40	2452
	SUN E.	121 30 47	2595	119 51 44	2595	118 12 43	2597	116 33 44	2599
5	Aldebaran W.	77 31 33	2273	79 18 13	2275	81 4 49	2279	82 51 20	2282
	Pollux W.	34 25 28	2428	36 8 9	2428	37 51 5	2419	39 34 12	2413
	Spica E.	56 41 3	2313	54 55 23	2319	53 9 51	2324	51 24 27	2331
	Venus E.	71 33 35	2667	69 56 11	2671	68 18 52	2675	66 41 38	2679
	SUN E.	108 19 28	2610	106 40 47	2613	105 2 10	2617	103 23 38	2620
6	Aldebaran W.	91 42 34	2301	93 28 32	2306	95 14 23	2310	97 0 8	2314
	Pollux W.	48 11 36	2396	49 55 16	2396	51 38 56	2396	53 22 37	2397
	Spica E.	42 39 46	2366	40 55 22	2375	39 11 12	2385	37 27 16	2396
	Venus E.	58 36 56	2701	57 0 18	2707	55 23 47	2711	53 47 22	2716
	SUN E.	95 12 12	2640	93 34 11	2645	91 56 16	2649	90 18 26	2654
7	Pollux W.	62 0 36	2405	63 44 3	2408	65 27 26	2412	67 10 44	2415
	Regulus W.	25 39 2	2338	27 24 6	2342	29 9 4	2347	30 53 55	2352
	Mars W.	23 7 33	2437	24 50 15	2441	26 32 51	2445	28 15 22	2449
	Venus E.	45 47 7	2745	44 11 27	2751	42 35 55	2756	41 0 32	2764
	SUN E.	82 11 3	2679	80 33 55	2684	78 56 53	2689	77 19 59	2695
8	Pollux W.	75 45 58	2435	77 28 43	2440	79 11 21	2445	80 53 53	2450
	Regulus W.	39 36 20	2378	41 20 26	2384	43 4 24	2389	44 48 14	2394
	Mars W.	36 46 27	2471	38 28 21	2476	40 10 8	2481	41 51 48	2487
	Venus E.	33 5 48	2800	31 31 20	2808	29 57 3	2818	28 22 58	2826
	SUN E.	69 17 22	2724	67 41 14	2730	66 5 14	2737	64 29 23	2743
9	Pollux W.	89 24 39	2477	91 6 25	2483	92 48 1	2489	94 29 29	2496
	Regulus W.	53 25 25	2424	55 8 26	2429	56 51 19	2435	58 34 3	2442
	Mars W.	50 18 15	2513	51 59 10	2519	53 39 57	2525	55 20 35	2530

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Dist.	XVh.	P. L. of Dist.	XVIIIh.	P. L. of Dist.	XXIh.	P. L. of Dist.
1	α Pegasi W.	104° 17' 17"	2643	105° 55' 15"	2644	107° 33' 10"	2646	109° 11' 2"	2649
	Jupiter W.	91 10 54	2391	92 57 6	2397	94 43 25	2393	96 29 50	2379
	α Arietis W.	61 0 21	2478	62 42 5	2467	64 24 5	2467	66 6 19	2448
	Aldebaran W.	27 36 31	2387	29 22 49	2383	31 9 15	2378	32 55 47	2373
	Regulus E.	52 32 23	2396	50 46 3	2391	48 59 35	2377	47 13 1	2372
	Mars E.	53 25 30	2390	51 41 41	2386	49 57 45	2390	48 13 42	2375
2	Jupiter W.	105 23 14	2364	107 10 7	2362	109 57 2	2361	111 43 59	2360
	α Arietis W.	74 40 16	2416	76 23 29	2411	78 6 48	2407	79 50 13	2403
	Aldebaran W.	41 49 54	2358	43 36 56	2356	45 24 2	2353	47 11 10	2352
	Regulus E.	38 18 46	2357	36 31 43	2355	34 44 37	2353	32 57 29	2352
	Mars E.	39 32 2	2360	37 47 29	2359	36 2 53	2356	34 18 15	2347
	Spica E.	92 7 7	2386	90 20 46	2383	88 34 22	2381	86 47 55	2380
	Venus E.	104 10 27	2646	102 32 37	2645	100 54 44	2644	99 16 49	2643
3	α Arietis W.	88 28 6	2396	90 11 44	2396	91 55 21	2399	93 38 56	2401
	Aldebaran W.	56 7 11	2350	57 54 24	2351	59 41 36	2351	61 28 47	2353
	Spica E.	77 55 25	2380	76 8 56	2381	74 22 28	2382	72 36 3	2384
	Venus E.	91 6 58	2643	89 29 0	2643	87 51 2	2643	86 13 6	2644
	SUN E.	128 7 1	2664	126 27 58	2663	124 48 54	2663	123 9 50	2664
4	α Arietis W.	102 16 0	2418	103 59 10	2423	105 42 12	2429	107 25 5	2436
	Aldebaran W.	70 24 11	2363	72 11 7	2364	73 58 0	2367	75 44 49	2370
	Pollux W.	27 38 31	2611	29 19 29	2606	31 1 1	2465	32 43 3	2449
	Spica E.	63 44 42	2398	61 58 39	2391	60 12 41	2396	58 26 49	2399
	Venus E.	78 3 55	2656	76 26 14	2657	74 48 37	2660	73 11 4	2663
	SUN E.	114 54 47	2601	113 15 53	2602	111 37 1	2606	109 58 13	2607
5	Aldebaran W.	84 37 46	2396	86 24 6	2399	88 10 21	2394	89 56 31	2397
	Pollux W.	41 17 28	2407	43 0 53	2403	44 44 23	2400	46 27 58	2396
	Spica E.	49 39 12	2337	47 54 6	2343	46 9 9	2360	44 24 22	2367
	Venus E.	65 4 30	2663	63 27 27	2669	61 50 31	2664	59 13 40	2667
	SUN E.	101 45 10	2624	100 6 47	2626	98 28 30	2632	96 50 18	2636
6	Aldebaran W.	98 45 47	2319	100 31 20	2324	102 16 45	2328	104 2 4	2333
	Pollux W.	55 6 17	2396	56 49 55	2399	58 33 32	2401	60 17 6	2403
	Spica E.	35 43 35	2408	34 0 11	2421	32 17 6	2436	30 34 21	2450
	Venus E.	52 11 4	2722	50 34 53	2728	48 58 50	2734	47 22 55	2739
	SUN E.	88 40 46	2656	87 3 10	2663	85 25 41	2669	83 48 19	2673
7	Pollux W.	68 53 58	2418	70 27 7	2423	72 20 10	2426	74 3 7	2431
	Regulus W.	32 38 39	2387	34 23 15	2392	36 7 44	2396	37 52 5	2373
	Mars W.	29 57 47	2463	31 40 6	2468	33 22 19	2462	35 4 26	2466
	Venus E.	39 25 17	2771	37 50 11	2778	36 15 14	2786	34 40 26	2792
	SUN E.	75 43 12	2701	74 6 33	2707	72 30 2	2712	70 53 38	2718
8	Pollux W.	82 36 17	2456	84 18 34	2460	86 0 44	2465	87 42 45	2471
	Regulus W.	46 31 57	2401	48 15 31	2406	49 58 57	2412	51 42 15	2417
	Mars W.	43 33 20	2493	45 14 45	2497	46 56 3	2502	48 37 13	2508
	Venus E.	26 49 4	2636	25 15 23	2645	23 41 54	2656	22 8 39	2666
	SUN E.	62 53 40	2760	61 18 6	2766	59 42 40	2763	58 7 23	2769
9	Pollux W.	96 10 48	2802	97 51 58	2810	99 32 58	2817	101 13 48	2824
	Regulus W.	60 16 38	2448	61 59 4	2456	63 41 21	2461	65 23 29	2467
	Mars W.	57 1 6	2637	58 41 28	2643	60 21 41	2649	62 1 46	2656

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Dist.	IIIh.	P. L. of Dist.	VIh.	P. L. of Dist.	IXh.	P. L. of Dist.
9	SUN	E.	56° 32' 15"	3776	54° 57' 16"	3784	53° 22' 27"	3791	51° 47' 48"	3798
10	Pollux	W.	102 54 28	2581	104 34 58	2589	106 15 16	2547	107 55 24	2555
	Regulus	W.	67 5 28	2474	68 47 17	2493	70 28 56	2488	72 10 26	2495
	Mars	W.	63 41 42	2562	65 21 29	2569	67 1 7	2575	68 40 36	2582
	SUN	E.	43 57 1	2840	42 23 25	2848	40 50 0	2856	39 16 47	2867
11	Regulus	W.	80 35 24	2533	82 15 52	2540	83 56 9	2548	85 36 15	2556
	Mars	W.	76 55 37	2618	78 34 7	2626	80 13 27	2633	81 50 37	2641
	SUN	E.	31 33 54	2921	30 2 3	2926	28 30 28	2949	26 59 11	2964
16	SUN	W.	28 10 6	3343	29 33 29	3348	30 56 45	3355	32 19 53	3362
	Fomalhaut	E.	44 43 29	3504	43 23 9	3546	42 3 36	3594	40 44 55	3645
	Jupiter	E.	71 54 36	2939	70 23 7	2940	68 51 51	2950	67 20 47	2960
	α Arietis	E.	102 15 45	3070	100 46 59	3078	99 18 23	3087	97 49 58	3095
17	SUN	W.	39 13 36	3395	40 35 57	3408	42 58 10	3409	43 20 16	3415
	Fomalhaut	E.	34 26 53	3595	33 15 0	4078	32 4 37	4182	30 55 54	4300
	Jupiter	E.	59 48 19	3013	58 18 22	3020	56 48 34	3028	55 18 56	3035
	α Arietis	E.	90 30 17	3135	89 2 50	3148	87 35 32	3151	86 8 24	3166
18	SUN	W.	50 8 57	3445	51 30 22	3451	52 51 41	3455	54 12 55	3460
	α Aquilæ	W.	33 30 28	5692	34 20 15	5890	35 12 17	6221	36 6 23	6571
	Jupiter	E.	47 53 2	3070	46 24 16	3076	44 55 37	3081	43 27 4	3087
	α Arietis	E.	78 55 0	3195	77 28 46	3208	76 2 40	3210	74 36 43	3217
	Aldebaran	E.	110 47 40	3039	109 18 16	3044	107 48 58	3050	106 19 46	3054
19	SUN	W.	60 57 59	3476	62 18 50	3478	63 39 38	3480	65 0 26	3480
	α Aquilæ	W.	41 2 38	4523	42 6 10	4444	43 10 52	4870	44 16 40	4304
	Jupiter	E.	36 5 48	3106	34 37 48	3111	33 9 52	3114	31 41 59	3117
	α Arietis	E.	67 28 58	3250	66 3 48	3257	64 38 46	3263	63 13 51	3270
	Aldebaran	E.	98 55 2	3071	97 26 17	3078	95 57 34	3075	94 28 54	3075
20	SUN	W.	71 44 13	3479	73 5 1	3477	74 25 51	3475	75 46 44	3471
	α Aquilæ	W.	49 59 34	4043	51 10 31	4009	52 22 8	5063	53 34 24	5028
	α Arietis	E.	56 11 8	3302	54 46 59	3309	53 22 58	3315	51 59 4	3323
	Aldebaran	E.	87 5 45	3075	85 37 6	3074	84 8 26	3072	82 39 43	3070
21	SUN	W.	82 32 6	3445	83 53 26	3444	85 14 53	3438	86 36 28	3431
	α Aquilæ	W.	59 44 6	3776	60 59 33	3750	62 15 27	3725	63 31 48	3701
	α Arietis	E.	45 2 1	3372	43 39 12	3384	42 16 37	3396	40 54 18	3414
	Aldebaran	E.	75 15 9	3051	73 45 59	3045	72 16 42	3039	70 47 18	3034
22	SUN	W.	93 26 31	3387	94 49 2	3377	96 11 45	3368	97 34 40	3356
	α Aquilæ	W.	69 59 37	3593	71 18 19	3573	72 37 23	3554	73 56 48	3535
	Fomalhaut	W.	35 59 6	3837	37 13 30	3773	38 29 0	3713	39 45 33	3654
	Aldebaran	E.	63 18 10	2964	61 47 50	2956	60 17 19	2976	58 46 35	2965
	Pollux	E.	107 15 43	3052	105 46 34	3042	104 17 13	3031	102 47 40	3021
23	SUN	W.	104 32 35	3294	105 56 54	3280	107 21 29	3255	108 46 21	3251
	α Aquilæ	W.	80 38 54	3445	82 0 18	3431	83 22 0	3414	84 44 1	3398
	Fomalhaut	W.	46 22 6	3430	47 43 49	3358	49 6 14	3297	50 29 20	3223
	α Pegasi	W.	34 12 25	4166	35 21 23	4061	36 32 3	3964	37 44 18	3877
	Aldebaran	E.	51 9 36	2906	49 37 28	2896	48 5 4	2883	46 32 23	2869
	Pollux	E.	95 16 22	2962	93 45 21	2949	92 14 4	2935	90 42 31	2922

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Dist.	XVh.	P. L. of Dist.	XVIIIh.	P. L. of Dist.	XXIh.	P. L. of Dist.
9	SUN	E.	50° 13' 18"	2808	48° 38' 58"	2815	47° 4' 48"	2822	45° 30' 49"	2831
10	Pollux	W.	109 35 21	2854	111 15 6	2873	112 54 39	2881	114 34 0	2890
	Regulus	W.	73 51 46	2802	75 32 56	2810	77 13 56	2817	78 54 45	2825
	Mars	W.	70 19 56	2889	71 59 6	2896	73 38 6	2904	75 16 56	2913
	SUN	E.	37 43 45	2877	36 10 57	2887	34 38 22	2896	33 6 1	2910
11	Regulus	W.	87 16 10	2854	88 55 54	2873	90 35 26	2892	92 14 46	2890
	Mars	W.	83 28 36	2849	85 6 24	2857	86 44 1	2866	88 21 27	2874
	SUN	E.	25 28 12	2880	23 57 35	2898	22 27 19	2916	20 57 28	2938
16	SUN	W.	33 42 53	2898	35 5 46	2875	36 28 31	2892	37 51 7	2899
	Fomalhaut	E.	39 27 9	2702	38 10 24	2761	36 54 41	2828	35 40 8	2895
	Jupiter	E.	65 49 55	2978	64 19 15	2986	62 48 45	2995	61 18 26	3006
	α Arietis	E.	96 21 42	2103	94 53 36	2111	93 25 40	2119	91 57 54	2127
17	SUN	W.	44 42 14	2422	46 4 4	2429	47 25 48	2436	48 47 26	2440
	Fomalhaut	E.	29 49 1	4431	28 44 8	4482	27 41 28	4757	26 41 16	4895
	Jupiter	E.	53 49 28	2043	52 20 9	2050	50 50 58	2057	49 21 56	2064
	α Arietis	E.	84 41 25	2166	83 14 35	2173	81 47 54	2181	80 21 23	2188
18	SUN	W.	55 34 4	2454	56 55 8	2498	58 16 9	2471	59 37 6	2474
	α Aquilæ	W.	37 2 23	4937	38 0 8	4815	38 59 31	4708	40 0 23	4611
	Jupiter	E.	41 58 38	2091	40 30 18	2096	39 2 3	2100	37 33 53	2104
	α Arietis	E.	73 10 54	2224	71 45 13	2221	70 19 40	2227	68 54 15	2244
	Aldebaran	E.	104 50 40	2056	103 21 39	2052	101 52 43	2055	99 23 51	2059
19	SUN	W.	66 21 11	2481	67 41 57	2481	69 2 41	2481	70 23 27	2480
	α Aquilæ	W.	45 23 29	4244	46 31 14	4187	47 39 52	4135	48 49 20	4087
	Jupiter	E.	30 14 10	2119	28 46 24	2121	26 18 40	2122	24 50 58	2125
	α Arietis	E.	61 49 3	2276	60 24 23	2282	58 59 51	2288	57 35 26	2294
	Aldebaran	E.	93 0 15	2077	91 31 37	2078	90 8 0	2078	88 34 23	2077
20	SUN	W.	77 7 40	2499	78 28 39	2454	79 49 42	2460	81 10 51	2455
	α Aquilæ	W.	54 47 15	2896	56 0 40	2892	57 14 38	2892	58 29 7	2893
	α Arietis	E.	50 35 18	2332	49 11 43	2340	47 48 18	2340	46 25 4	2340
	Aldebaran	E.	81 10 56	2067	79 42 7	2064	78 13 12	2060	76 44 14	2056
21	SUN	W.	87 58 10	2422	89 20 1	2475	90 42 1	2405	92 4 11	2397
	α Aquilæ	W.	64 48 34	2677	66 5 45	2686	67 23 19	2634	68 41 17	2613
	α Arietis	E.	39 32 17	2430	38 10 36	2453	36 49 19	2477	35 28 29	2404
	Aldebaran	E.	69 17 47	2026	67 48 7	2019	66 18 18	2011	64 48 19	2008
22	SUN	W.	98 57 47	2344	100 21 7	2332	101 44 42	2319	103 8 30	2306
	α Aquilæ	W.	75 16 33	2616	76 36 39	2499	77 37 4	2481	78 57 49	2463
	Fomalhaut	W.	41 3 7	2604	42 21 37	2657	43 40 58	2613	45 1 8	2470
	Aldebaran	E.	57 15 39	2955	55 44 30	2944	54 13 7	2932	52 41 29	2920
	Pollux	E.	101 17 53	2009	99 47 52	2096	98 17 37	2086	96 47 8	2074
23	SUN	W.	110 11 30	2220	111 36 57	2220	113 2 42	2205	114 28 45	2189
	α Aquilæ	W.	86 6 20	2381	87 28 58	2396	89 51 53	2361	91 15 5	2337
	Fomalhaut	W.	51 53 5	2290	53 17 28	2266	54 42 27	2229	56 8 2	2198
	α Pegasi	W.	38 58 1	2798	40 13 5	2728	41 29 25	2658	42 46 57	2605
	Aldebaran	E.	44 59 25	2935	43 26 9	2849	41 52 35	2828	40 18 42	2813
	Pollux	E.	89 10 40	2009	87 38 32	2094	86 6 6	2080	84 33 22	2066

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Dist.	IIIh.	P. L. of Dist.	VIh.	P. L. of Dist.	IXh.	P. L. of Dist.
24	SUN W.	115° 55' 7"	8173	117° 21' 48"	8107	118° 48' 50"	8139	120° 16' 11"	8123
	α Aquilæ W.	91 38 34	8023	93 2 19	8309	94 26 20	8296	95 50 36	8302
	Fomalhaut W.	57 34 13	8170	59 0 58	8143	60 28 15	8116	61 56 5	8080
	α Pegasi W.	44 5 38	8036	45 25 22	8481	46 46 7	8481	48 7 49	8382
	Jupiter W.	23 53 34	8048	25 27 0	8031	27 0 47	8014	28 34 57	8706
	Aldebaran E.	38 44 31	8708	37 10 0	8702	35 35 8	8766	33 59 57	8761
	Pollux E.	83 0 19	8051	81 26 57	8036	79 53 15	8021	78 19 15	8006
25	SUN W.	127 38 15	8034	129 7 45	8017	130 37 37	8000	132 7 52	8001
	Fomalhaut W.	69 23 1	8008	70 53 54	8046	72 25 16	8023	73 57 6	8001
	α Pegasi W.	55 9 14	8177	56 35 51	8140	58 3 12	8106	59 31 14	8073
	Jupiter W.	36 31 35	8707	38 8 5	8089	39 44 59	8072	41 22 16	8086
	Pollux E.	70 24 9	8728	68 48 7	8712	67 11 43	8697	65 34 59	8681
	Regulus E.	106 6 47	8008	104 29 23	8060	102 51 36	8033	101 13 26	8017
26	Fomalhaut W.	81 43 6	8708	83 17 37	8779	84 52 33	8760	86 27 54	8742
	α Pegasi W.	67 1 3	8021	68 32 48	8001	70 5 6	8070	71 37 57	8090
	Jupiter W.	49 34 44	8066	51 14 26	8046	52 54 33	8030	54 35 4	8013
	α Arietis W.	24 24 18	8046	25 43 51	8413	27 5 53	8297	28 30 8	8106
	Pollux E.	57 26 6	8006	55 47 19	8001	54 8 12	8078	52 28 47	8064
	Regulus E.	92 56 46	8030	91 16 15	8013	89 35 20	8494	87 53 59	8477
	Mars E.	99 25 29	8087	97 45 49	8060	96 5 45	8033	94 25 16	8014
27	Fomalhaut W.	94 30 21	8060	96 7 54	8046	97 45 47	8033	99 23 58	8020
	α Pegasi W.	79 29 45	8741	81 5 30	8723	82 41 41	8704	84 18 16	8687
	Jupiter W.	63 3 37	8489	64 46 30	8413	66 29 46	8397	68 13 25	8382
	α Arietis W.	35 57 10	8047	37 30 37	8706	39 5 10	8750	40 40 43	8708
	Pollux E.	44 7 23	8009	42 26 22	8000	40 45 9	8494	39 3 46	8409
	Regulus E.	79 21 19	8006	77 37 37	8079	75 53 32	8063	74 9 4	8047
	Mars E.	85 56 44	8498	84 13 49	8411	82 30 30	8390	80 46 49	8360
28	Fomalhaut W.	107 38 49	8000	109 18 26	8063	110 58 12	8068	112 38 5	8063
	α Pegasi W.	92 26 37	8012	94 5 15	8001	95 44 8	8001	97 23 16	8001
	Jupiter W.	76 57 5	8009	78 42 51	8006	80 28 56	8003	82 15 20	8071
	α Arietis W.	48 51 10	8042	50 31 25	8016	52 12 16	8491	53 53 42	8408
	Regulus E.	65 21 18	8076	63 34 43	8082	61 47 48	8049	60 0 34	8037
	Mars E.	72 2 47	8004	70 16 54	8001	68 30 42	8078	66 44 10	8006
29	Jupiter W.	91 11 38	8017	92 59 40	8008	94 47 56	8000	96 36 24	8001
	α Arietis W.	62 28 19	8074	64 12 31	8009	65 57 5	8046	67 41 59	8033
	Aldebaran W.	29 9 3	8184	30 57 55	8174	32 47 1	8160	34 36 20	8167
	Regulus E.	51 0 5	8183	49 11 12	8174	47 22 6	8165	45 32 46	8167
	Mars E.	57 47 3	8009	55 58 49	8000	54 10 21	8180	52 21 39	8182
	Spica E.	104 43 37	8014	102 55 31	8006	101 7 11	8196	99 18 37	8186
30	Jupiter W.	105 41 31	8100	107 30 59	8106	109 20 33	8103	111 10 13	8109
	α Arietis W.	76 30 34	8006	78 16 56	8078	80 3 29	8072	81 50 8	8068
	Aldebaran W.	43 45 43	8126	45 36 3	8121	47 26 30	8117	49 17 3	8116
	Regulus E.	36 23 17	8126	34 32 56	8120	32 42 28	8116	30 51 54	8114
	Mars E.	43 15 21	8149	41 25 37	8146	39 35 47	8141	37 45 51	8137
	Spica E.	90 13 0	8106	88 23 25	8102	86 33 43	8107	84 43 55	8104
31	α Arietis W.	90 44 46	8008	92 31 47	8000	94 18 48	8000	96 5 46	8002
	Aldebaran W.	58 30 46	8100	60 21 36	8107	62 12 25	8107	64 3 13	8109
	Spica E.	75 34 6	8139	73 44 6	8139	71 54 7	8141	70 4 10	8143

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Dist.	XVh.	P. L. of Dist.	XVIIIh.	P. L. of Dist.	XXIh.	P. L. of Dist.
24	SUN W.	121° 43' 53"	3105	123° 11' 57"	3088	124° 40' 21"	3070	126° 9' 7"	3052
	α Aquilæ W.	97 15 8	3271	98 39 53	3260	100 4 51	3248	101 30 3	3237
	Fomalhaut W.	63 24 27	3065	64 53 20	3039	66 22 44	3018	67 52 38	2992
	α Pegasi W.	49 30 26	3337	50 53 55	3294	52 18 14	3263	53 43 21	3214
	Jupiter W.	30 9 30	3779	31 44 26	3760	33 19 46	3743	34 55 29	3735
	Aldebaran E.	32 24 24	3735	30 48 30	3719	29 12 15	3702	27 35 37	3686
	Pollux E.	76 44 54	3790	75 10 14	3775	73 35 13	3760	71 59 51	3744
25	SUN W.	133 38 29	2963	135 9 28	2948	136 40 51	2936	138 12 36	2908
	Fomalhaut W.	75 29 24	2979	77 2 10	2959	78 35 22	2938	80 9 1	2918
	α Pegasi W.	60 59 57	3042	62 29 18	3011	63 59 17	2992	65 29 52	2964
	Jupiter W.	42 59 57	2937	44 38 2	2918	46 16 32	2901	47 55 26	2883
	Pollux E.	63 57 53	3006	62 20 27	2950	60 42 40	2935	59 4 33	2921
	Regulus E.	99 34 55	3009	97 55 58	2982	96 16 38	2964	94 36 54	2947
26	Fomalhaut W.	88 3 38	2794	89 39 46	2707	91 16 16	2691	92 53 8	2675
	α Pegasi W.	73 11 20	2937	74 45 13	2906	76 19 35	2782	77 54 26	2761
	Jupiter W.	56 15 59	2496	57 57 18	2479	59 39 1	2462	61 21 7	2445
	α Arietis W.	29 56 21	3110	31 24 18	3092	32 53 51	3082	34 24 51	3061
	Pollux E.	50 49 3	2662	49 9 2	2640	47 28 44	2629	45 48 11	2618
	Regulus E.	86 12 13	2461	84 30 5	2444	82 47 33	2428	81 4 38	2411
	Mars E.	92 44 22	2497	91 3 4	2479	89 21 21	2462	87 39 15	2445
27	Fomalhaut W.	101 2 26	2907	102 41 11	2906	104 20 11	2887	105 59 24	2878
	α Pegasi W.	85 55 14	2970	87 32 34	2954	89 10 16	2940	90 48 17	2926
	Jupiter W.	69 57 26	2960	71 41 50	2932	73 26 34	2917	75 11 39	2902
	α Arietis W.	42 17 12	2970	43 54 32	2936	45 32 41	2901	47 11 34	2870
	Pollux E.	37 22 17	2496	35 40 44	2484	33 59 8	2485	32 17 34	2469
	Regulus E.	72 24 13	2333	70 39 1	2317	68 53 27	2304	67 7 33	2289
	Mars E.	79 2 45	2364	77 18 18	2348	75 33 29	2334	73 48 19	2320
28	Fomalhaut W.	114 18 4	2651	115 58 7	2649	117 38 12	2640	119 18 16	2631
	α Pegasi W.	99 2 36	2673	100 42 8	2666	102 21 50	2660	104 1 40	2654
	Jupiter W.	84 2 2	2360	85 49 2	2348	87 36 18	2337	89 23 50	2327
	α Arietis W.	55 35 41	2447	57 18 9	2436	59 1 6	2408	60 44 30	2390
	Regulus E.	58 13 2	2226	56 25 12	2214	54 37 6	2203	52 48 43	2193
	Mars E.	64 57 20	2253	63 10 11	2241	61 22 45	2230	59 35 2	2219
29	Jupiter W.	98 25 6	2184	100 13 58	2177	102 3 0	2171	103 52 11	2165
	α Arietis W.	69 27 11	2221	71 12 40	2211	72 58 24	2201	74 44 23	2192
	Aldebaran W.	36 25 52	2160	38 15 35	2148	40 5 28	2137	41 55 31	2131
	Regulus E.	43 43 13	2149	41 53 29	2142	40 3 34	2136	38 13 30	2130
	Mars E.	50 32 45	2174	48 43 39	2167	46 54 22	2161	45 4 56	2156
	Spica E.	97 29 51	2180	95 40 53	2173	93 51 45	2167	92 2 27	2161
30	Jupiter W.	112 59 57	2147	114 49 45	2146	116 39 36	2144	118 29 29	2143
	α Arietis W.	83 36 55	2264	85 23 47	2261	87 10 44	2259	88 57 44	2258
	Aldebaran W.	51 7 40	2111	52 58 22	2109	54 49 8	2107	56 39 56	2106
	Regulus E.	29 1 16	2112	27 10 34	2111	25 19 51	2110	23 29 7	2108
	Mars E.	35 55 49	2136	34 5 44	2134	32 15 36	2133	30 25 27	2132
	Spica E.	82 54 3	2141	81 4 7	2139	79 14 8	2138	77 24 7	2138
31	α Arietis W.	97 52 41	2266	99 39 30	2270	101 26 14	2276	103 12 49	2282
	Aldebaran W.	65 53 58	2111	67 44 41	2118	69 35 20	2116	71 25 55	2120
	Spica E.	68 14 17	2146	66 24 28	2149	64 34 44	2153	62 45 6	2160

GREENWICH MEAN TIME.

JANUARY.							FEBRUARY.						
Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.		Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	
Noon.	Noon.	Noon.	Noon.	Noon.	h	m	Noon.	Noon.	Noon.	Noon.	Noon.	h	m
h m s	s	° ' "	"	h m			h m s	s	° ' "	"	h m		
1	20 28 39.57	12.957	20 44 46.7	43.42	1	47.1	1	22 58 47.51	11.356	7 59 25.4	74.78	2	14.9
2	20 33 49.90	12.902	20 27 5.9	44.98	1	48.3	2	23 3 19.58	11.319	7 29 24.6	75.27	2	15.5
3	20 38 58.90	12.847	20 8 49.8	46.39	1	49.5	3	23 7 50.79	11.283	6 59 12.4	75.73	2	16.1
4	20 44 6.55	12.790	19 49 59.0	47.82	1	50.7	4	23 12 21.16	11.249	6 28 49.9	76.13	2	16.6
5	20 49 12.84	12.733	19 30 34.3	49.23	1	51.8	5	23 16 50.73	11.217	5 58 17.9	76.52	2	17.1
6	20 54 17.76	12.676	19 10 36.5	50.68	1	53.0	6	23 21 19.53	11.186	5 27 36.9	76.88	2	17.6
7	20 59 21.30	12.619	18 50 6.3	51.92	1	54.1	7	23 25 47.60	11.155	4 56 47.3	77.22	2	18.1
8	21 4 23.46	12.562	18 29 4.4	53.23	1	55.1	8	23 30 15.00	11.128	4 25 50.0	77.52	2	18.6
9	21 9 24.23	12.503	18 7 31.6	54.49	1	56.1	9	23 34 41.77	11.103	3 54 46.0	77.78	2	19.2
10	21 14 23.62	12.446	17 45 28.7	55.73	1	57.2	10	23 39 7.95	11.079	3 23 36.1	78.02	2	19.7
11	21 19 21.65	12.389	17 22 56.3	56.94	1	58.3	11	23 43 33.57	11.057	2 52 21.0	78.22	2	20.3
12	21 24 18.30	12.332	16 59 55.1	58.12	1	59.3	12	23 47 58.67	11.036	2 21 1.4	78.39	2	20.8
13	21 29 13.58	12.275	16 36 26.2	59.26	2	0.3	13	23 52 23.27	11.016	1 49 37.9	78.54	2	21.2
14	21 34 7.50	12.218	16 12 30.2	60.38	2	1.2	14	23 56 47.46	10.999	1 18 11.2	78.66	2	21.6
15	21 39 0.07	12.162	15 48 7.7	61.47	2	2.1	15	0 1 11.25	10.984	0 46 42.2	78.74	2	22.1
16	21 43 51.31	12.108	15 23 19.6	62.51	2	3.0	16	0 5 34.68	10.969	-0 15 11.5	78.79	2	22.6
17	21 48 41.25	12.054	14 58 6.8	63.53	2	3.9	17	0 9 57.80	10.968	+0 16 20.1	78.82	2	23.0
18	21 53 29.90	12.001	14 32 30.1	64.51	2	4.8	18	0 14 20.66	10.947	0 47 51.9	78.81	2	23.4
19	21 58 17.28	11.947	14 6 30.2	65.46	2	5.7	19	0 18 43.29	10.939	1 19 23.2	78.78	2	23.8
20	22 3 3.39	11.896	13 40 8.0	66.38	2	6.5	20	0 23 5.73	10.931	1 50 53.3	78.71	2	24.3
21	22 7 48.27	11.844	13 13 24.1	67.26	2	7.3	21	0 27 27.99	10.925	2 22 21.4	78.61	2	24.8
22	22 12 31.93	11.794	12 46 19.5	68.11	2	8.1	22	0 31 50.14	10.921	2 53 46.8	78.48	2	25.2
23	22 17 14.41	11.746	12 18 54.9	68.92	2	8.9	23	0 36 12.20	10.919	3 25 8.8	78.33	2	25.6
24	22 21 55.73	11.698	11 51 11.1	69.70	2	9.7	24	0 40 34.22	10.917	3 56 26.7	78.14	2	26.0
25	22 26 35.91	11.651	11 23 8.9	70.46	2	10.5	25	0 44 56.23	10.917	4 27 39.8	77.98	2	26.4
26	22 31 14.98	11.605	10 54 49.1	71.18	2	11.2	26	0 49 18.25	10.918	4 58 47.5	77.89	2	26.8
27	22 35 52.96	11.560	10 26 12.5	71.86	2	11.8	27	0 53 40.30	10.921	5 29 48.9	77.41	2	27.2
28	22 40 29.88	11.517	9 57 19.9	72.51	2	12.4	28	0 58 2.45	10.926	6 0 43.2	77.09	2	27.6
29	22 45 5.76	11.474	9 28 12.1	73.12	2	13.1	29	1 2 24.73	10.931	6 31 29.6	76.76	2	28.1
30	22 49 40.63	11.433	8 58 49.9	73.71	2	13.7	30	1 6 47.14	10.937	7 2 7.5	76.38	2	28.5
31	22 54 14.54	11.393	8 29 14.1	74.26	2	14.3	31	1 11 9.71	10.944	7 32 36.2	76.09	2	29.0
32	22 58 47.51	11.355	- 7 59 25.4	74.78	2	14.9	32	1 15 32.48	10.951	+8 2 55.0	75.56	2	29.4
Day of Month, 1st.	6th.	11th.	16th.	21st.	26th.	31st.	Day of the Month,	5th.	10th.	15th.	20th.	25th.	30th.
Semidiam.	5.7	5.8	5.8	5.9	6.0	6.1	Semidiameter	6.3	6.5	6.6	6.8	6.9	7.1
Hor. Par.	5.7	5.8	5.9	6.0	6.1	6.2	Hor. Parallax	6.4	6.5	6.7	6.8	7.0	7.2

GREENWICH MEAN TIME.

MARCH.						APRIL.					
Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
1	h m s	s	° ' "	"	h m	1	h m s	s	° ' "	"	h m
1	1 6 47.14	10-987	+ 7 2 7.5	76-38	2 28.5	1	3 25 49.12	11-566	+20 38 31.5	50-84	2 45.5
2	1 11 9.71	10-944	7 32 36.2	76-99	2 29.0	2	3 30 26.96	11-566	20 58 36.9	49-59	2 46.2
3	1 15 32.48	10-954	8 2 55.0	76-56	2 29.4	3	3 35 5.27	11-608	21 18 12.0	48-53	2 46.9
4	1 19 55.50	10-964	8 33 3.2	76-10	2 29.8	4	3 39 44.00	11-622	21 37 16.3	47-08	2 47.6
5	1 24 18.79	10-976	9 3 0.1	74-61	2 30.3	5	3 44 23.13	11-637	21 55 49.2	45-71	2 48.3
6	1 28 42.37	10-989	9 32 44.9	74-10	2 30.8	6	3 49 2.64	11-663	22 13 50.4	44-37	2 49.0
7	1 33 6.28	11-003	10 2 17.0	73-56	2 31.2	7	3 53 42.49	11-666	22 31 19.3	43-02	2 49.7
8	1 37 30.54	11-019	10 31 35.6	73-98	2 31.7	8	3 58 22.65	11-679	22 48 15.6	41-66	2 50.4
9	1 41 55.17	11-034	11 0 40.1	72-39	2 32.2	9	4 3 3.08	11-689	23 4 38.8	40-27	2 51.1
10	1 46 20.20	11-052	11 29 29.7	71-74	2 32.6	10	4 7 43.72	11-697	23 20 28.4	38-86	2 51.8
11	1 50 45.67	11-071	11 58 3.8	71-08	2 33.1	11	4 12 24.53	11-703	23 35 43.9	37-43	2 52.5
12	1 55 11.61	11-091	12 26 21.7	70-39	2 33.7	12	4 17 5.47	11-707	23 50 25.1	35-99	2 53.2
13	1 59 38.04	11-111	12 54 22.7	69-67	2 34.2	13	4 21 46.49	11-710	24 4 31.6	34-54	2 54.0
14	2 4 4.96	11-133	13 22 6.1	68-93	2 34.7	14	4 26 27.56	11-711	24 18 3.1	33-08	2 54.8
15	2 8 32.41	11-155	13 49 31.3	68-16	2 35.1	15	4 31 8.61	11-709	24 30 59.3	31-60	2 55.4
16	2 13 0.40	11-178	14 16 37.7	67-35	2 35.6	16	4 35 49.59	11-704	24 43 19.9	30-11	2 56.0
17	2 17 28.96	11-202	14 43 24.7	66-53	2 36.1	17	4 40 30.41	11-696	24 55 4.6	28-61	2 56.7
18	2 21 58.09	11-226	15 9 51.3	65-67	2 36.7	18	4 45 11.00	11-686	25 6 13.4	27-11	2 57.4
19	2 26 27.82	11-251	15 35 56.9	64-78	2 37.2	19	4 49 51.32	11-673	25 16 46.0	25-60	2 58.1
20	2 30 58.15	11-277	16 1 40.9	63-87	2 37.8	20	4 54 31.31	11-667	25 26 42.2	24-08	2 58.8
21	2 35 29.10	11-303	16 27 2.8	63-98	2 38.4	21	4 59 10.88	11-658	25 36 1.9	22-56	2 59.5
22	2 40 0.65	11-327	16 52 1.8	61-96	2 39.0	22	5 3 49.93	11-615	25 44 45.1	21-08	3 0.2
23	2 44 32.82	11-353	17 16 37.2	60-96	2 39.7	23	5 8 28.38	11-566	25 52 51.5	19-50	3 0.9
24	2 49 5.60	11-379	17 40 48.3	59-93	2 40.3	24	5 13 6.17	11-558	26 0 21.2	17-97	3 1.6
25	2 53 39.01	11-405	18 4 34.7	58-90	2 41.0	25	5 17 43.19	11-524	26 7 14.1	16-43	3 2.3
26	2 58 13.03	11-430	18 27 55.8	57-83	2 41.6	26	5 22 19.34	11-486	26 13 30.1	14-90	3 3.0
27	3 2 47.65	11-454	18 50 50.8	56-73	2 42.2	27	5 26 54.54	11-445	26 19 9.4	13-37	3 3.7
28	3 7 22.85	11-479	19 13 18.9	55-60	2 42.8	28	5 31 28.70	11-399	26 24 11.9	11-84	3 4.4
29	3 11 58.62	11-501	19 35 19.6	54-44	2 43.4	29	5 36 1.71	11-349	26 28 38.0	10-22	3 5.1
30	3 16 34.92	11-524	19 56 52.3	53-28	2 44.1	30	5 40 33.46	11-295	26 32 27.7	8-32	3 5.8
31	3 21 11.76	11-546	20 17 56.5	52-06	2 44.8	31	5 45 3.86	11-237	26 35 41.2	7-31	3 6.4
32	3 25 49.12	11-568	+20 38 31.5	50-84	2 45.5	32	5 49 32.82	11-174	+26 38 18.7	5-82	3 7.0
Day of Month, 1st.						Day of the Month, 5th.					
6th.						10th.					
11th.						15th.					
16th.						20th.					
21st.						25th.					
26th.						30th.					
31st.											
Semidiam. 7.1						Semidiameter 8.9					
Hor. Par. 7.2						Hor. Parallax 8.9					
7.3						9.2					
7.5						9.6					
7.7						10.1					
8.0						10.5					
8.2						11.1					
8.5											
8.6											

GREENWICH MEAN TIME.

MAY.						JUNE.							
Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.		
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.			
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m		
1	5 45 3.86	11-237	+26 35 41.2	+7-31	3 6.4	1	7 43 45.62	7-080	+23 56 58.6	28-34	3 2.6		
2	5 49 32.82	11-174	26 38 18.7	8-82	3 7.0	2	7 46 32.87	6-868	23 45 33.5	28-33	3 1.4		
3	5 54 0.23	11-107	26 40 20.5	4-33	3 7.5	3	7 49 14.57	6-618	23 33 54.7	28-38	3 0.1		
4	5 58 25.97	11-036	26 41 46.7	2-86	3 8.0	4	7 51 50.54	6-376	23 22 3.4	28-38	2 58.8		
5	6 2 49.94	10-960	26 42 37.8	+1-40	3 8.4	5	7 54 20.61	6-126	23 10 0.6	30-33	2 57.4		
6	6 7 12.05	10-880	26 42 53.9	-0-05	3 8.8	6	7 56 44.60	5-889	22 57 47.5	30-74	2 55.8		
7	6 11 32.19	10-798	26 42 35.5	1-47	3 9.1	7	7 59 2.36	5-606	22 45 25.0	31-11	2 54.2		
8	6 15 50.25	10-707	26 41 43.0	2-88	3 9.5	8	8 1 13.69	5-324	22 32 54.3	31-42	2 52.5		
9	6 20 6.13	10-614	26 40 17.0	4-28	3 9.8	9	8 3 18.40	5-064	22 20 16.6	31-09	2 50.6		
10	6 24 19.73	10-517	26 38 17.8	5-64	3 10.1	10	8 5 16.28	4-766	22 7 33.0	31-91	2 48.6		
11	6 28 30.94	10-416	26 35 46.1	6-99	3 10.3	11	8 7 7.14	4-469	21 54 44.7	32-09	2 46.5		
12	6 32 39.65	10-309	26 32 42.1	8-32	3 10.5	12	8 8 50.78	4-164	21 41 52.8	32-21	2 44.3		
13	6 36 45.76	10-198	26 29 6.4	9-62	3 10.7	13	8 10 27.00	3-850	21 28 58.6	32-28	2 41.9		
14	6 40 49.17	10-088	26 24 59.9	10-90	3 10.8	14	8 11 55.58	3-528	21 16 3.2	32-31	2 39.4		
15	6 44 49.75	9-968	26 20 23.1	12-15	3 10.9	15	8 13 16.34	3-197	21 3 7.8	32-28	2 36.8		
16	6 48 47.39	9-838	26 15 16.7	13-36	3 10.9	16	8 14 29.05	2-887	20 50 13.6	32-21	2 34.1		
17	6 52 41.97	9-706	26 9 41.4	14-56	3 10.9	17	8 15 33.49	2-606	20 37 21.8	32-08	2 31.2		
18	6 56 33.39	9-574	26 3 37.7	15-72	3 10.8	18	8 16 29.45	2-150	20 24 33.7	31-90	2 28.2		
19	7 0 21.53	9-434	25 57 6.5	16-86	3 10.6	19	8 17 16.71	1-784	20 11 50.4	31-68	2 25.0		
20	7 4 6.24	9-289	25 50 8.5	17-96	3 10.4	20	8 17 55.07	1-408	19 59 13.0	31-41	2 21.7		
21	7 7 47.41	9-138	25 42 44.7	19-01	3 10.1	21	8 18 24.32	1-026	19 46 42.8	31-09	2 18.2		
22	7 11 24.89	8-982	25 34 55.7	20-04	3 9.7	22	8 18 44.28	0-634	19 34 20.9	30-71	2 14.6		
23	7 14 58.56	8-821	25 26 42.4	21-04	3 9.3	23	8 18 54.76	+0-226	19 22 8.5	30-29	2 10.8		
24	7 18 28.28	8-653	25 18 5.4	22-01	3 8.9	24	8 18 55.60	-0-168	19 10 6.8	29-82	2 6.9		
25	7 21 53.89	8-479	25 9 5.7	22-93	3 8.4	25	8 18 46.64	0-679	18 58 16.9	29-31	2 2.8		
26	7 25 15.26	8-299	24 59 44.6	23-80	3 7.8	26	8 18 27.78	0-998	18 46 39.7	28-76	1 58.5		
27	7 28 32.24	8-112	24 50 3.2	24-63	3 7.1	27	8 17 58.88	1-413	18 35 16.4	28-16	1 54.1		
28	7 31 44.66	7-919	24 40 2.1	25-44	3 6.3	28	8 17 19.93	1-832	18 24 8.0	27-52	1 49.5		
29	7 34 52.37	7-721	24 29 42.0	26-21	3 5.5	29	8 16 30.91	2-282	18 13 15.5	26-53	1 44.8		
30	7 37 55.20	7-514	24 19 3.9	26-58	3 4.6	30	8 15 31.85	2-688	18 2 39.9	26-12	1 39.9		
31	7 40 53.01	7-300	24 8 9.1	27-61	3 3.6	31	8 14 22.85	3-077	17 52 21.8	25-37	1 34.8		
32	7 43 45.62	7-080	+23 56 58.6	28-24	3 2.6	32	8 13 4.11	3-478	+17 42 22.0	24-59	1 29.5		
Day of the Month, 5th. 10th. 15th. 20th. 25th. 30th.						Day of the Month, 4th. 9th. 14th. 19th. 24th. 29th.							
Semidiameter	11.7	12.4	13.1	14.0	15.0	16.1	Semidiameter	17.3	18.7	20.3	22.0	23.8	25.6
Hor. Parallax	11.8	12.5	13.2	14.1	15.1	16.2	Hor. Parallax	17.4	18.9	20.4	22.2	24.0	25.8

GREENWICH MEAN TIME.

JULY.						AUGUST.					
Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	8 14 22.85	3.077	+17 52 21.8	26.37	1 34.8	1	7 9 12.16	3.408	+15 37 37.9	3.86	22 23.2
2	8 13 4.11	3.478	17 42 22.0	24.69	1 29.5	2	7 8 19.44	1.987	15 39 11.6	4.92	22 18.6
3	8 11 35.85	3.870	17 32 41.3	23.78	1 24.1	3	7 7 36.80	1.686	15 41 0.4	4.82	22 14.1
4	8 9 58.32	4.249	17 23 20.4	22.94	1 18.6	4	7 7 4.27	1.146	15 43 3.0	5.37	22 9.8
5	8 8 11.90	4.602	17 14 20.0	22.08	1 12.9	5	7 6 41.80	0.727	15 45 18.0	5.65	22 5.6
6	8 6 17.04	4.961	17 5 40.6	21.19	1 7.1	6	7 6 29.34	-0.312	15 47 44.2	6.29	22 1.6
7	8 4 14.23	5.370	16 57 22.7	20.28	1 1.1	7	7 6 26.75	+0.096	15 50 20.0	6.66	21 57.8
8	8 2 4.06	5.864	16 49 26.9	19.36	0 55.0	8	7 6 33.93	0.499	15 53 3.9	6.96	21 54.1
9	7 59 47.14	6.329	16 41 53.4	18.42	0 48.8	9	7 6 50.73	0.996	15 55 54.4	7.21	21 50.6
10	7 57 24.25	6.683	16 34 42.8	17.45	0 42.5	10	7 7 16.94	1.284	15 58 50.0	7.39	21 47.3
11	7 54 56.13	6.203	16 27 55.6	16.48	0 36.1	11	7 7 52.36	1.602	16 1 40.3	7.62	21 44.1
12	7 52 23.65	6.434	16 21 31.9	15.49	0 29.6	12	7 8 36.78	2.033	16 4 50.8	7.88	21 41.0
13	7 49 47.75	6.548	16 15 31.9	14.49	0 23.1	13	7 9 29.96	2.394	16 7 53.2	7.88	21 38.1
14	7 47 9.35	6.634	16 9 56.0	13.48	0 16.6	14	7 10 31.65	2.743	16 10 54.8	7.62	21 35.3
15	7 44 29.32	6.681	16 4 44.5	12.47	0 10.0	15	7 11 41.60	3.081	16 13 54.3	7.41	21 32.7
16	7 41 48.67	6.687	15 59 57.4	11.44	0 3.8	16	7 12 59.53	3.408	16 16 50.3	7.23	21 30.1
17	7 39 8.36	6.683	15 55 35.1	10.41	23 50.2	17	7 14 25.19	3.726	16 19 41.5	7.00	21 27.7
18	7 36 29.37	6.577	15 51 37.6	9.38	23 43.7	18	7 15 58.33	4.032	16 22 26.6	6.72	21 25.4
19	7 33 52.64	6.464	15 48 5.0	8.34	23 37.3	19	7 17 38.72	4.328	16 25 4.2	6.38	21 23.3
20	7 31 19.11	6.313	15 44 57.2	7.31	23 30.9	20	7 19 26.09	4.614	16 27 33.0	6.09	21 21.2
21	7 28 49.65	6.134	15 42 14.3	6.27	23 24.6	21	7 21 20.20	4.889	16 29 51.8	5.84	21 19.3
22	7 26 25.15	6.002	15 39 55.9	5.26	23 18.3	22	7 23 20.80	5.156	16 31 59.6	5.07	21 17.4
23	7 24 6.34	5.849	15 38 1.7	4.26	23 12.2	23	7 25 27.65	5.411	16 33 55.2	4.84	21 15.6
24	7 21 53.98	5.687	15 36 31.4	3.27	23 6.2	24	7 27 40.55	5.689	16 35 37.5	3.96	21 13.9
25	7 19 48.73	5.509	15 35 24.6	2.30	23 0.3	25	7 29 59.29	5.897	16 37 5.4	3.24	21 12.4
26	7 17 51.17	4.737	15 34 40.8	1.36	22 54.5	26	7 32 23.64	6.137	16 38 17.8	2.97	21 11.1
27	7 16 1.84	4.374	15 34 19.3	-0.44	22 48.9	27	7 34 53.41	6.349	16 39 13.8	1.97	21 9.7
28	7 14 21.20	4.004	15 34 19.5	+0.44	22 43.5	28	7 37 28.39	6.563	16 39 52.4	1.23	21 8.4
29	7 12 49.62	3.630	15 34 40.5	1.28	22 38.2	29	7 40 8.39	6.767	16 40 12.7	+0.44	21 7.2
30	7 11 27.43	3.234	15 35 21.3	2.09	22 33.0	30	7 42 53.23	6.966	16 40 13.8	-0.37	21 6.1
31	7 10 14.37	3.018	15 36 20.8	3.84	22 28.0	31	7 45 42.72	7.156	16 39 54.9	1.22	21 5.1
32	7 9 12.16	3.408	+15 37 37.9	3.86	22 23.2	32	7 48 36.67	7.337	+16 39 15.2	2.10	21 4.1
Day of the Month, 4th. 9th. 14th. 19th. 24th. 30th.						Day of the Month, 3d. 8th. 13th. 18th. 23d. 29th.					
Semidiameter " 27.3 28.6 29.3 29.3 28.5 27.1						Semidiameter " 25.5 23.7 21.9 20.3 18.8 17.4					
Hor. Parallax 27.5 28.8 29.5 29.5 28.7 27.3						Hor. Parallax 25.7 23.9 22.1 20.4 18.9 17.5					

GREENWICH MEAN TIME.

SEPTEMBER.						OCTOBER.							
Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.		
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.			
	^h ^m ^s	^s	[°] ['] ["]	["]	^h ^m		^h ^m ^s	^s	[°] ['] ["]	["]	^h ^m		
1	7 48 36.67	7.387	+16 39 15.2	2.10	21 4.1	1	9 38 7.56	10.212	+12 59 43.3	35.55	20 56.2		
2	7 51 34.91	7.812	16 38 14.0	3.01	21 3.2	2	9 42 13.13	10.261	12 45 16.6	36.67	20 56.4		
3	7 54 37.27	7.081	16 36 50.5	3.96	21 2.3	3	9 46 19.59	10.286	12 30 22.9	37.79	20 56.6		
4	7 57 43.60	7.843	16 35 4.0	4.93	21 1.5	4	9 50 26.88	10.320	12 15 2.5	38.89	20 56.8		
5	8 0 53.74	7.998	16 32 53.9	5.93	21 0.8	5	9 54 34.96	10.352	11 59 15.8	39.98	20 57.0		
6	8 4 7.52	8.146	16 30 19.6	6.94	21 0.1	6	9 58 43.78	10.382	11 43 3.2	41.06	20 57.2		
7	8 7 24.77	8.288	16 27 20.7	7.96	20 59.5	7	10 2 53.29	10.409	11 26 24.9	42.12	20 57.4		
8	8 10 45.34	8.423	16 23 56.6	9.04	20 59.0	8	10 7 3.43	10.436	11 9 21.5	43.16	20 57.6		
9	8 14 9.10	8.563	16 20 6.8	10.12	20 58.5	9	10 11 14.18	10.459	10 51 53.3	44.18	20 57.9		
10	8 17 35.90	8.677	16 15 50.9	11.23	20 58.0	10	10 15 25.48	10.482	10 34 0.7	45.18	20 58.1		
11	8 21 5.61	8.796	16 11 8.4	12.33	20 57.6	11	10 19 37.32	10.504	10 15 44.1	46.18	20 58.4		
12	8 24 38.07	8.907	16 5 59.1	13.45	20 57.2	12	10 23 49.66	10.522	9 57 3.9	47.15	20 58.7		
13	8 28 13.13	9.013	16 0 22.7	14.58	20 56.9	13	10 28 2.44	10.541	9 38 0.8	48.09	20 59.0		
14	8 31 50.68	9.114	15 54 19.1	15.73	20 56.6	14	10 32 15.64	10.558	9 18 35.3	49.03	20 59.3		
15	8 35 30.60	9.210	15 47 47.9	16.88	20 56.4	15	10 36 29.25	10.575	8 58 47.7	49.98	20 59.6		
16	8 39 12.76	9.301	15 40 48.8	18.05	20 56.2	16	10 40 43.23	10.589	8 38 38.5	50.82	20 59.9		
17	8 42 57.06	9.388	15 33 21.5	19.22	20 56.0	17	10 44 57.56	10.607	8 18 8.3	51.68	21 0.2		
18	8 46 43.38	9.470	15 25 26.2	20.40	20 55.9	18	10 49 12.22	10.617	7 57 17.7	52.52	21 0.5		
19	8 50 31.60	9.547	15 17 2.7	21.57	20 55.8	19	10 53 27.19	10.630	7 36 7.3	53.33	21 0.8		
20	8 54 21.62	9.620	15 8 11.0	22.74	20 55.7	20	10 57 42.46	10.642	7 14 37.7	54.13	21 1.1		
21	8 58 13.36	9.689	14 58 51.1	23.92	20 55.6	21	11 2 58.02	10.654	6 52 49.3	54.89	21 1.4		
22	9 2 6.73	9.756	14 49 2.9	25.10	20 55.6	22	11 6 13.87	10.666	6 30 42.8	55.64	21 1.7		
23	9 6 1.65	9.818	14 38 46.3	26.28	20 55.6	23	11 10 30.00	10.678	6 8 18.7	56.36	21 2.0		
24	9 9 58.02	9.877	14 28 1.5	27.45	20 55.6	24	11 14 46.41	10.689	5 45 37.6	57.06	21 2.3		
25	9 13 55.78	9.933	14 16 48.4	28.63	20 55.6	25	11 19 3.11	10.702	5 22 40.0	57.73	21 2.7		
26	9 17 54.85	9.987	14 5 7.1	29.80	20 55.7	26	11 23 20.11	10.714	4 59 26.6	58.37	21 3.0		
27	9 21 55.16	10.037	13 52 57.8	30.97	20 55.3	27	11 27 37.39	10.726	4 35 58.0	58.99	21 3.4		
28	9 25 56.64	10.086	13 40 20.7	32.13	20 55.9	28	11 31 54.93	10.737	4 12 15.0	59.58	21 3.8		
29	9 29 59.25	10.131	13 27 15.7	33.28	20 56.0	29	11 36 12.77	10.750	3 48 18.0	60.15	21 4.1		
30	9 34 2.92	10.173	13 13 43.1	34.43	20 56.1	30	11 40 30.93	10.763	3 24 7.6	60.69	21 4.5		
31	9 38 7.56	10.212	12 59 43.3	35.55	20 56.2	31	11 44 49.42	10.777	2 59 44.6	61.21	21 4.9		
32	9 42 13.13	10.261	+12 45 16.6	36.67	20 56.4	32	11 49 8.25	10.792	+ 2 35 9.4	61.70	21 5.3		
Day of the Month, 2d. 7th. 13th. 17th. 22d. 27th.						Day of the Month, 2d. 7th. 13th. 17th. 22d. 27th.							
Semidiameter	16.2	15.1	14.2	13.4	12.7	11.9	Semidiameter	11.3	10.8	10.3	9.9	9.5	9.1
Hor. Parallax	16.3	15.3	14.3	13.5	12.7	12.0	Hor. Parallax	11.4	10.9	10.4	9.9	9.5	9.2

GREENWICH MEAN TIME.

NOVEMBER.

DECEMBER.

Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
1	11 49 8.25	10.792	+ 2 35 9.4	61.70	21 5.3	1	14 2 27.99	11.666	-10 17 8.7	62.82	21 20.6
2	11 53 27.43	10.807	2 10 22.8	62.17	21 5.6	2	14 7 6.05	11.607	10 41 59.0	61.86	21 21.3
3	11 57 46.97	10.822	1 45 25.4	62.60	21 6.0	3	14 11 45.11	11.649	11 6 37.6	61.84	21 22.0
4	12 2 6.88	10.838	1 20 17.9	63.01	21 6.4	4	14 16 25.19	11.692	11 31 3.7	60.81	21 22.8
5	12 6 27.19	10.854	0 55 1.0	63.38	21 6.8	5	14 21 6.32	11.735	11 55 16.5	60.24	21 23.5
6	12 10 47.88	10.870	0 29 35.5	63.73	21 7.2	6	14 25 48.51	11.780	12 19 15.2	59.62	21 24.3
7	12 15 8.97	10.888	+ 0 4 2.1	64.04	21 7.6	7	14 30 31.77	11.825	12 42 59.0	58.99	21 25.1
8	12 19 30.51	10.907	- 0 21 38.6	64.33	21 8.1	8	14 35 16.13	11.871	13 6 27.0	58.32	21 25.9
9	12 23 52.50	10.925	0 47 25.9	64.59	21 8.5	9	14 40 1.60	11.918	13 29 38.5	57.62	21 26.7
10	12 28 14.93	10.944	1 13 19.1	64.83	21 8.9	10	14 44 48.22	11.966	13 52 32.6	56.87	21 27.6
11	12 32 37.83	10.964	1 39 17.5	65.02	21 9.3	11	14 49 35.96	12.013	14 15 8.6	56.10	21 28.5
12	12 37 1.22	10.983	2 5 20.1	65.18	21 9.8	12	14 54 24.86	12.061	14 37 25.5	55.28	21 29.4
13	12 41 25.12	11.007	2 31 26.1	65.31	21 10.3	13	14 59 14.91	12.109	14 59 22.6	54.45	21 30.3
14	12 45 49.55	11.029	2 57 34.9	65.41	21 10.8	14	15 4 6.12	12.168	15 20 59.1	53.57	21 31.2
15	12 50 14.52	11.052	3 23 46.0	65.49	21 11.2	15	15 8 58.50	12.207	15 42 14.2	52.66	21 32.1
16	12 54 40.06	11.077	3 49 58.5	65.53	21 11.7	16	15 13 52.07	12.246	16 3 7.1	51.73	21 33.0
17	12 59 6.20	11.102	4 16 11.6	65.54	21 12.2	17	15 18 46.81	12.285	16 23 37.0	50.74	21 34.0
18	13 3 32.95	11.129	4 42 24.4	65.51	21 12.7	18	15 23 42.73	12.324	16 43 42.9	49.73	21 35.1
19	13 8 0.33	11.156	5 8 36.2	65.45	21 13.2	19	15 28 39.83	12.404	17 3 24.1	48.69	21 36.1
20	13 12 28.37	11.183	5 34 46.3	65.37	21 13.8	20	15 33 38.12	12.453	17 22 40.1	47.61	21 37.1
21	13 16 57.09	11.213	6 0 54.0	65.28	21 14.4	21	15 38 37.58	12.502	17 41 30.1	46.52	21 38.2
22	13 21 26.53	11.242	6 26 58.5	65.10	21 14.9	22	15 43 38.22	12.551	17 59 53.1	45.38	21 39.3
23	13 25 56.71	11.273	6 52 59.0	64.92	21 15.5	23	15 48 40.04	12.600	18 17 48.4	44.21	21 40.4
24	13 30 27.65	11.305	7 18 54.8	64.71	21 16.1	24	15 53 43.02	12.648	18 35 15.4	43.02	21 41.5
25	13 34 59.37	11.339	7 44 45.2	64.47	21 16.7	25	15 58 47.16	12.697	18 52 13.4	41.79	21 42.7
26	13 39 31.93	11.374	8 10 29.3	64.19	21 17.3	26	16 3 52.46	12.744	19 8 41.6	40.54	21 43.9
27	13 44 5.33	11.410	8 36 6.3	63.88	21 17.9	27	16 8 58.90	12.792	19 24 39.4	39.25	21 45.1
28	13 48 39.62	11.447	9 1 35.6	63.54	21 18.6	28	16 14 6.48	12.839	19 40 5.8	37.93	21 46.3
29	13 53 14.80	11.485	9 26 56.3	63.17	21 19.2	29	16 19 15.17	12.884	19 55 0.3	36.59	21 47.6
30	13 57 50.92	11.524	9 52 7.6	62.76	21 19.9	30	16 24 24.94	12.929	20 9 22.4	35.23	21 48.7
31	14 2 27.99	11.565	10 17 8.7	62.32	21 20.6	31	16 29 35.77	12.973	20 23 11.4	33.84	21 50.0
32	14 7 6.05	11.607	-10 41 59.0	61.85	21 21.3	32	16 34 47.63	13.015	-20 36 26.7	32.42	21 51.3

Day of the Month,	1st.	6th.	11th.	16th.	21st.	26th.	Day of Month,	1st.	6th.	11th.	16th.	21st.	26th.	31st.
Semidiameter	" 8.8	" 8.5	" 8.2	" 7.9	" 7.7	" 7.5	Semidiam.	" 7.3	" 7.1	" 6.9	" 6.7	" 6.6	" 6.4	" 6.3
Hor. Parallax	8.8	8.5	8.2	8.0	7.7	7.5	Hor. Par.	7.3	7.1	6.9	6.8	6.6	6.5	6.4

GREENWICH MEAN TIME.

JANUARY.						FEBRUARY.					
Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
Noon.	Noon.	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.	Noon.		
h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m	
1 18 46 25.76	8-361	23 53 38.7	8-21	0 4.7	1 20 28 57.84	8-005	20 7 8.8	27-09	23 44.3		
2 18 49 46.44	8-380	23 50 14.1	8-08	0 4.1	2 20 32 11.95	8-079	19 55 57.7	28-24	23 43.6		
3 18 53 7.08	8-359	23 46 33.1	9-56	0 3.5	3 20 35 25.68	8-063	19 44 33.4	28-79	23 42.9		
4 18 56 27.68	8-357	23 42 35.8	10-28	0 2.9	4 20 38 39.03	8-047	19 32 56.1	29-23	23 42.2		
5 18 59 48.22	8-344	23 38 22.3	10-91	0 2.3	5 20 41 51.99	8-031	19 21 5.8	29-06	23 41.4		
6 19 3 8.69	8-381	23 33 52.6	11-58	0 0.7	6 20 45 4.54	8-015	19 9 2.9	30-28	23 40.7		
7 19 6 29.09	8-347	23 29 6.9	12-24	0 0.1	7 20 48 16.70	7-998	18 56 47.6	30-00	23 39.9		
8 19 9 49.41	8-343	23 24 5.4	12-00	0 0.5	8 20 51 28.47	7-981	18 44 20.1	31-41	23 39.2		
9 19 13 9.63	8-339	23 18 48.1	12-56	23 59.3	9 20 54 39.83	7-964	18 31 40.5	31-91	23 38.4		
10 19 16 29.73	8-334	23 13 14.9	14-22	23 58.7	10 20 57 50.78	7-947	18 18 49.0	32-40	23 37.7		
11 19 19 49.71	8-328	23 7 26.0	14-08	23 58.1	11 21 1 1.33	7-930	18 5 45.6	32-08	23 36.9		
12 19 23 9.54	8-322	23 1 21.4	15-58	23 57.4	12 21 4 11.48	7-913	17 52 30.6	32-37	23 36.1		
13 19 26 29.22	8-316	22 55 1.1	16-18	23 56.8	13 21 7 21.21	7-896	17 39 4.1	32-84	23 35.3		
14 19 29 48.73	8-309	22 48 25.2	16-58	23 56.2	14 21 10 30.53	7-879	17 25 26.4	34-30	23 34.5		
15 19 33 8.07	8-302	22 41 33.9	17-47	23 55.6	15 21 13 39.44	7-862	17 11 37.7	34-76	23 33.7		
16 19 36 27.22	8-294	22 34 27.1	18-11	23 55.0	16 21 16 47.94	7-845	16 57 38.1	35-21	23 32.9		
17 19 39 46.17	8-286	22 27 5.0	18-76	23 54.4	17 21 19 56.02	7-827	16 43 27.8	35-65	23 32.1		
18 19 43 4.90	8-276	22 19 27.5	19-38	23 53.8	18 21 23 3.67	7-810	16 29 7.0	36-08	23 31.3		
19 19 46 23.41	8-266	22 11 34.8	20-01	23 53.2	19 21 26 10.91	7-792	16 14 35.8	36-51	23 30.5		
20 19 49 41.69	8-256	22 3 27.1	20-53	23 52.5	20 21 29 17.74	7-775	15 59 54.6	36-98	23 29.7		
21 19 52 59.72	8-245	21 55 4.6	21-25	23 51.9	21 21 32 24.15	7-757	15 45 3.4	37-34	23 28.8		
22 19 56 17.47	8-233	21 46 27.3	21-57	23 51.2	22 21 35 30.14	7-738	15 30 2.5	37-74	23 28.0		
23 19 59 34.94	8-221	21 37 35.4	22-48	23 50.5	23 21 38 35.71	7-722	15 14 52.1	38-13	23 27.1		
24 20 2 52.11	8-209	21 28 28.9	23-09	23 49.8	24 21 41 40.85	7-705	14 59 32.4	38-51	23 26.2		
25 20 6 8.98	8-197	21 19 8.0	23-59	23 49.2	25 21 44 45.56	7-687	14 44 3.8	38-88	23 25.3		
26 20 9 25.55	8-184	21 9 32.7	24-28	23 48.5	26 21 47 49.85	7-670	14 28 26.4	39-24	23 24.5		
27 20 12 41.80	8-170	20 59 43.1	24-57	23 47.8	27 21 50 53.72	7-652	14 12 40.2	39-58	23 23.6		
28 20 15 57.71	8-156	20 49 39.5	25-45	23 47.1	28 21 53 57.16	7-635	13 56 45.5	40-08	23 22.7		
29 20 19 13.28	8-141	20 39 22.1	26-02	23 46.4	29 21 57 0.18	7-617	13 40 42.6	40-39	23 21.8		
30 20 22 28.50	8-126	20 28 51.1	26-58	23 45.7	30 22 0 2.78	7-600	13 24 31.6	40-58	23 20.9		
31 20 25 43.36	8-111	20 18 6.6	27-14	23 45.0	31 22 3 4.97	7-583	13 8 12.8	40-05	23 20.0		
32 20 28 57.84	8-095	20 7 8.8	27-59	23 44.3	32 22 6 6.76	7-566	12 51 46.3	41-28	23 19.1		
Day of the Month,						Day of the Month,					
		1st.	9th.	17th.	25th.			3d.	10th.	18th.	26th.
Semidiameter		"	"	"	"	Semidiameter		"	"	"	"
Horizontal Parallax		2.1	2.1	2.1	2.1	Horizontal Parallax		2.1	2.1	2.2	2.2
		3.6	3.6	3.6	3.6			3.6	3.6	3.7	3.7

GREENWICH MEAN TIME.

MARCH.						APRIL.					
Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	22 0 2.78	7.000	13 24 31.6	40.82	23 20.9	1	23 31 27.15	7.183	4 14 37.9	46.71	22 50.0
2	22 3 4.97	7.883	13 8 12.8	40.96	23 20.0	2	23 34 19.42	7.174	3 55 56.2	46.77	22 49.0
3	22 6 6.76	7.866	12 51 46.3	41.20	23 19.1	3	23 37 11.49	7.165	3 37 13.2	46.82	22 47.9
4	22 9 8.14	7.849	12 35 12.4	41.37	23 18.1	4	23 40 3.34	7.156	3 18 28.9	46.86	22 46.8
5	22 12 9.12	7.832	12 18 31.2	41.56	23 17.2	5	23 42 54.99	7.148	2 59 43.6	46.90	22 45.7
6	22 15 9.70	7.816	12 1 43.1	42.18	23 16.2	6	23 45 46.46	7.141	2 40 57.6	46.93	22 44.6
7	22 18 9.90	7.800	11 44 48.1	42.43	23 15.3	7	23 48 37.76	7.134	2 22 11.0	46.96	22 43.5
8	22 21 9.72	7.784	11 27 46.4	42.71	23 14.4	8	23 51 28.90	7.127	2 3 23.9	46.98	22 42.4
9	22 24 9.16	7.768	11 10 38.2	43.07	23 13.5	9	23 54 19.88	7.120	1 44 36.6	46.97	22 41.3
10	22 27 8.24	7.753	10 53 23.8	43.28	23 12.5	10	23 57 10.70	7.114	1 25 49.2	46.97	22 40.2
11	22 30 6.95	7.738	10 36 3.4	43.48	23 11.5	11	0 0 1.37	7.108	1 7 1.9	46.95	22 39.1
12	22 33 5.31	7.724	10 18 37.0	43.73	23 10.5	12	0 2 51.90	7.103	0 48 14.8	46.94	22 38.0
13	22 36 3.32	7.710	10 1 5.0	43.96	23 9.5	13	0 5 42.32	7.098	0 29 28.1	46.92	22 36.9
14	22 39 0.99	7.696	9 43 27.5	44.17	23 8.5	14	0 8 32.62	7.093	0 10 42.2	46.89	22 35.8
15	22 41 58.33	7.682	9 25 44.8	44.39	23 7.5	15	0 11 22.82	7.089	+ 0 8 2.8	46.85	22 34.7
16	22 44 55.34	7.668	9 7 57.1	44.59	23 6.5	16	0 14 12.92	7.085	0 26 46.8	46.80	22 33.6
17	22 47 52.02	7.654	8 50 4.6	44.78	23 5.5	17	0 17 2.92	7.081	0 45 29.7	46.75	22 32.5
18	22 50 48.38	7.641	8 32 7.6	44.97	23 4.5	18	0 19 52.83	7.077	1 4 11.0	46.69	22 31.4
19	22 53 44.43	7.628	8 14 6.2	45.16	23 3.5	19	0 22 42.65	7.074	1 22 50.7	46.62	22 30.3
20	22 56 40.18	7.616	7 56 0.4	45.33	23 2.4	20	0 25 32.40	7.071	1 41 28.7	46.54	22 29.2
21	22 59 35.62	7.604	7 37 50.5	45.49	23 1.4	21	0 28 22.09	7.068	2 0 4.8	46.46	22 28.0
22	23 2 30.77	7.592	7 19 36.9	45.65	23 0.4	22	0 31 11.70	7.065	2 18 38.6	46.36	22 26.9
23	23 5 25.63	7.580	7 1 19.6	45.79	22 59.4	23	0 34 1.24	7.063	2 37 10.1	46.26	22 25.8
24	23 8 20.20	7.568	6 42 59.0	45.90	22 58.3	24	0 36 50.74	7.061	2 55 39.1	46.15	22 24.7
25	23 11 14.49	7.556	6 24 35.2	46.00	22 57.3	25	0 39 40.20	7.060	3 14 5.3	46.03	22 23.5
26	23 14 8.50	7.545	6 6 8.6	46.17	22 56.3	26	0 42 20.62	7.058	3 32 28.6	45.91	22 22.4
27	23 17 2.24	7.534	5 47 39.2	46.28	22 55.3	27	0 45 18.99	7.056	3 50 48.8	45.78	22 21.3
28	23 19 55.73	7.523	5 29 7.2	46.38	22 54.2	28	0 48 8.33	7.055	4 9 5.8	45.64	22 20.2
29	23 22 48.96	7.513	5 10 33.0	46.47	22 53.2	29	0 50 57.66	7.054	4 27 19.4	45.49	22 19.0
30	23 25 41.93	7.503	4 51 56.6	46.56	22 52.1	30	0 53 46.97	7.054	4 45 29.3	45.33	22 17.9
31	23 28 34.65	7.493	4 33 18.2	46.64	22 51.1	31	0 56 36.27	7.054	5 3 35.4	45.17	22 16.8
32	23 31 27.15	7.483	4 14 37.9	46.71	22 50.0	32	0 59 25.56	7.054	+ 5 21 37.5	45.00	22 15.7
Day of the Month,						Day of the Month,					
5th.						6th.					
13th.						14th.					
21st.						22d.					
29th.						30th.					
Semidiameter						Semidiameter					
Horizontal Parallax						Horizontal Parallax					
2.2						2.2					
3.7						3.8					
2.2						2.2					
3.7						3.8					
2.2						2.3					
3.7						3.8					

GREENWICH MEAN TIME.

MAY.						JUNE.					
Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	0 56 36.27	7.064	+ 5 3 35.4	48.17	22 16.8	1	2 24 36.84	7.168	+13 39 17.4	26.97	21 42.6
2	0 59 25.56	7.064	5 21 37.5	48.00	22 15.7	2	2 27 28.93	7.174	13 54 0.6	26.61	21 41.5
3	1 2 14.86	7.065	5 39 35.6	44.88	22 14.5	3	2 30 21.16	7.180	14 8 35.1	26.26	21 40.4
4	1 5 4.19	7.066	5 57 29.4	44.68	22 13.4	4	2 33 13.54	7.186	14 23 0.8	25.88	21 39.4
5	1 7 53.55	7.068	6 15 18.9	44.46	22 12.3	5	2 36 6.07	7.192	14 37 17.6	25.51	21 38.3
6	1 10 42.96	7.069	6 33 3.8	44.27	22 11.2	6	2 38 58.76	7.199	14 51 25.3	25.13	21 37.3
7	1 13 32.41	7.061	6 50 44.0	44.07	22 10.0	7	2 41 51.60	7.205	15 5 23.8	24.75	21 36.2
8	1 16 21.90	7.063	7 8 19.2	43.86	22 8.9	8	2 44 44.59	7.211	15 19 13.0	24.36	21 35.2
9	1 19 11.44	7.065	7 25 49.4	43.65	22 7.8	9	2 47 37.74	7.217	15 32 52.8	23.96	21 34.1
10	1 22 1.04	7.068	7 43 14.5	43.43	22 6.7	10	2 50 31.05	7.224	15 46 23.0	23.56	21 33.1
11	1 24 50.71	7.071	8 0 34.2	43.20	22 5.6	11	2 53 24.52	7.230	15 59 43.6	23.16	21 32.0
12	1 27 40.46	7.074	8 17 48.4	42.97	22 4.5	12	2 56 18.14	7.237	16 12 54.6	22.74	21 31.0
13	1 30 30.29	7.077	8 34 56.9	42.73	22 3.4	13	2 59 11.91	7.244	16 26 55.7	22.32	21 29.9
14	1 33 20.20	7.081	8 51 59.5	42.48	22 2.3	14	3 2 5.84	7.250	16 38 46.8	21.91	21 28.9
15	1 36 10.21	7.085	9 8 56.2	42.28	22 1.2	15	3 4 59.92	7.256	16 51 27.7	21.49	21 27.8
16	1 39 0.31	7.089	9 25 46.8	41.97	22 0.1	16	3 7 54.14	7.262	17 3 58.4	21.06	21 26.8
17	1 41 50.51	7.093	9 42 31.2	41.71	21 59.0	17	3 10 48.51	7.268	17 16 18.7	20.63	21 25.7
18	1 44 40.81	7.097	9 59 9.3	41.44	21 57.9	18	3 13 43.01	7.274	17 28 28.8	20.20	21 24.7
19	1 47 31.21	7.102	10 15 40.7	41.16	21 56.8	19	3 16 37.64	7.280	17 40 28.4	19.76	21 23.7
20	1 50 21.71	7.106	10 32 5.3	40.87	21 55.7	20	3 19 32.39	7.285	17 52 17.4	19.31	21 22.7
21	1 53 12.33	7.111	10 48 22.9	40.58	21 54.6	21	3 22 27.27	7.290	18 3 55.6	18.86	21 21.6
22	1 56 3.06	7.115	11 4 33.4	40.28	21 53.5	22	3 25 22.27	7.295	18 15 23.1	18.41	21 20.6
23	1 58 53.91	7.120	11 20 36.7	39.98	21 52.4	23	3 28 17.40	7.300	18 26 39.7	17.96	21 19.6
24	2 1 44.76	7.125	11 36 32.6	39.67	21 51.3	24	3 31 12.64	7.304	18 37 45.2	17.49	21 18.6
25	2 4 35.92	7.130	11 52 21.0	39.35	21 50.2	25	3 34 7.98	7.308	18 48 39.5	17.02	21 17.5
26	2 7 27.10	7.135	12 8 1.7	39.03	21 49.1	26	3 37 3.42	7.312	18 59 22.7	16.56	21 16.5
27	2 10 18.40	7.140	12 23 34.6	38.70	21 48.0	27	3 39 58.96	7.316	19 9 54.7	16.09	21 15.5
28	2 13 9.82	7.145	12 38 59.6	38.37	21 46.9	28	3 42 54.59	7.320	19 20 15.3	15.62	21 14.5
29	2 16 1.37	7.151	12 54 16.5	38.03	21 45.8	29	3 45 50.31	7.324	19 30 24.5	15.14	21 13.5
30	2 18 53.05	7.156	13 9 25.2	37.68	21 44.7	30	3 48 46.11	7.327	19 40 22.3	14.66	21 12.5
31	2 21 44.88	7.162	13 24 25.6	37.33	21 43.7	31	3 51 42.00	7.331	19 50 8.5	14.18	21 11.5
32	2 24 36.84	7.168	+13 39 17.4	36.97	21 42.6	32	3 54 37.98	7.334	+19 59 43.3	23.70	21 10.5

Day of the Month,	8th.	16th.	24th.	Day of the Month,	1st.	9th.	17th.	25th.
Semidiameter,	"	"	"	Semidiameter	"	"	"	"
Horizontal Parallax,	2.3	2.3	2.3	Horizontal Parallax	2.4	2.4	2.4	2.4
	3.9	3.9	4.0		4.0	4.0	4.1	4.1

GREENWICH MEAN TIME.

JULY.

AUGUST.

Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
1	h m s	s	° ' "	"	h m	1	h m s	s	° ' "	"	h m
1	3 51 42.70	7.331	+19 50 8.5	24.18	21 11.5	1	5 22 40.33	7.281	+23 13 55.8	8.54	20 40.3
2	3 54 37.98	7.334	19 59 43.3	23.70	21 10.5	2	5 25 34.98	7.273	23 17 14.9	8.03	20 39.3
3	3 57 34.02	7.337	20 9 6.3	23.21	21 9.5	3	5 28 29.44	7.265	23 20 22.0	7.53	20 38.2
4	4 0 30.14	7.340	20 18 17.6	22.72	21 8.5	4	5 31 23.69	7.256	23 23 17.0	7.02	20 37.1
5	4 3 26.34	7.343	20 27 17.2	22.23	21 7.5	5	5 34 17.73	7.247	23 25 59.9	6.52	20 36.1
6	4 6 22.60	7.345	20 36 5.0	21.74	21 6.5	6	5 37 11.56	7.238	23 28 30.7	6.02	20 35.1
7	4 9 18.92	7.347	20 44 41.0	21.26	21 5.5	7	5 40 5.17	7.228	23 30 49.6	5.53	20 34.0
8	4 12 15.39	7.349	20 53 5.1	20.78	21 4.5	8	5 42 58.54	7.218	23 32 56.6	5.04	20 32.9
9	4 15 11.71	7.351	21 1 17.2	20.29	21 3.5	9	5 45 51.66	7.208	23 34 51.9	4.55	20 31.9
10	4 18 8.17	7.352	21 9 17.3	19.75	21 2.5	10	5 48 44.52	7.197	23 36 35.5	4.06	20 30.9
11	4 21 4.65	7.353	21 17 5.4	19.26	21 1.5	11	5 51 37.10	7.185	23 38 7.5	3.58	20 29.8
12	4 24 1.16	7.354	21 24 41.4	18.78	21 0.5	12	5 54 29.40	7.173	23 39 27.8	3.09	20 28.8
13	4 26 57.69	7.354	21 32 5.4	18.29	20 59.5	13	5 57 21.40	7.160	23 40 36.4	2.61	20 27.7
14	4 29 54.23	7.355	21 39 17.3	17.74	20 58.5	14	6 0 13.09	7.147	23 41 33.4	2.13	20 26.6
15	4 32 50.76	7.354	21 46 17.0	17.23	20 57.5	15	6 3 4.45	7.133	23 42 18.9	1.65	20 25.5
16	4 35 47.26	7.353	21 53 4.5	16.73	20 56.5	16	6 5 55.47	7.118	23 42 53.0	1.18	20 24.4
17	4 38 43.73	7.352	21 59 39.8	16.21	20 55.5	17	6 8 46.14	7.103	23 43 15.7	0.71	20 23.3
18	4 41 40.16	7.350	22 6 2.9	15.70	20 54.5	18	6 11 36.45	7.087	23 43 27.1	0.24	20 22.2
19	4 44 36.55	7.348	22 12 13.8	15.19	20 53.5	19	6 14 26.38	7.071	23 43 27.3	0.23	20 21.1
20	4 47 32.88	7.345	22 18 12.4	14.68	20 52.5	20	6 17 15.92	7.053	23 43 16.5	0.09	20 20.0
21	4 50 29.13	7.342	22 23 58.6	14.17	20 51.5	21	6 20 5.06	7.039	23 42 54.6	1.18	20 18.9
22	4 53 25.31	7.338	22 29 32.4	13.63	20 50.5	22	6 22 53.79	7.022	23 42 21.7	1.60	20 17.8
23	4 56 21.39	7.334	22 34 53.9	13.13	20 49.5	23	6 25 42.10	7.004	23 41 38.0	2.05	20 16.6
24	4 59 17.37	7.330	22 40 3.1	12.62	20 48.5	24	6 28 29.98	6.986	23 40 43.6	2.49	20 15.5
25	5 2 13.23	7.325	22 45 0.1	12.11	20 47.5	25	6 31 17.42	6.967	23 39 38.7	2.98	20 14.3
26	5 5 8.97	7.320	22 49 44.9	11.60	20 46.4	26	6 34 4.41	6.948	23 38 23.3	3.36	20 13.1
27	5 8 4.57	7.314	22 54 17.4	11.09	20 45.4	27	6 36 50.94	6.929	23 36 57.6	3.79	20 11.9
28	5 11 0.03	7.308	22 58 37.6	10.58	20 44.4	28	6 39 37.01	6.910	23 35 21.6	4.22	20 10.7
29	5 13 55.35	7.303	23 2 45.5	10.07	20 43.4	29	6 42 22.62	6.890	23 33 35.3	4.64	20 9.5
30	5 16 50.51	7.296	23 6 41.2	9.56	20 42.3	30	6 45 7.75	6.870	23 31 38.9	5.05	20 8.3
31	5 19 45.50	7.288	23 10 24.6	9.05	20 41.3	31	6 47 52.40	6.850	23 29 32.5	5.47	20 7.1
32	5 22 40.33	7.281	+23 13 55.8	8.54	20 40.3	32	6 50 36.56	6.829	+23 27 16.3	5.89	20 5.9

Day of the Month,	3d.	11th.	19th.	27th.	Day of the Month,	4th.	12th.	20th.	28th.
Semidiameter	" 2.5	" 2.5	" 2.5	" 2.6	Semidiameter	" 2.6	" 2.7	" 2.7	" 2.8
Horizontal Parallax	4.2	4.2	4.3	4.3	Horizontal Parallax	4.4	4.5	4.6	4.7

GREENWICH MEAN TIME.

SEPTEMBER.						OCTOBER.					
Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
1	h m s	s	° ' "	"	h m	1	h m s	s	° ' "	"	h m
1	6 50 36.56	6.820	+23 27 16.3	5.88	20 5.9	1	8 8 6.56	6.084	+21 13 45.0	15.44	19 24.9
2	6 53 20.22	6.808	23 24 50.3	6.29	20 4.7	2	8 10 31.02	6.008	21 7 31.7	15.68	19 23.3
3	6 56 3.36	6.787	23 22 14.7	6.69	20 3.5	3	8 12 54.72	5.972	21 1 13.3	15.87	19 21.8
4	6 58 45.98	6.765	23 19 29.6	7.08	20 2.2	4	8 15 17.68	5.941	20 54 50.2	16.07	19 20.2
5	7 1 28.08	6.743	23 16 35.1	7.47	20 1.0	5	8 17 39.89	5.909	20 48 22.1	16.27	19 18.6
6	7 4 9.64	6.720	23 13 31.3	7.85	19 59.7	6	8 20 1.34	5.876	20 41 49.1	16.46	19 17.0
7	7 6 50.66	6.697	23 10 18.4	8.23	19 58.5	7	8 22 21.99	5.843	20 35 11.6	16.64	19 15.4
8	7 9 31.13	6.674	23 6 56.5	8.60	19 57.2	8	8 24 41.64	5.810	20 28 30.0	16.82	19 13.8
9	7 12 11.04	6.651	23 3 25.7	8.97	19 55.9	9	8 27 0.89	5.776	20 21 44.3	16.98	19 12.2
10	7 14 50.38	6.627	22 59 46.2	9.33	19 54.6	10	8 29 19.13	5.743	20 14 54.8	17.14	19 10.5
11	7 17 29.14	6.603	22 55 58.2	9.68	19 53.3	11	8 31 36.55	5.708	20 8 1.7	17.29	19 8.9
12	7 20 7.29	6.576	22 52 1.7	10.03	19 52.0	12	8 33 53.15	5.674	20 1 5.0	17.43	19 7.2
13	7 22 44.83	6.550	22 47 57.0	10.37	19 50.7	13	8 36 8.91	5.639	19 54 5.0	17.56	19 5.5
14	7 25 21.76	6.525	22 43 44.1	10.71	19 49.3	14	8 38 23.82	5.603	19 47 2.0	17.69	19 3.8
15	7 27 58.06	6.498	22 39 23.2	11.05	19 48.0	15	8 40 37.87	5.567	19 39 56.0	17.81	19 2.1
16	7 30 33.72	6.471	22 34 54.4	11.38	19 46.6	16	8 42 51.05	5.530	19 32 47.2	17.92	19 0.3
17	7 33 8.73	6.444	22 30 17.9	11.68	19 45.2	17	8 45 3.35	5.493	19 25 35.9	18.02	18 58.6
18	7 35 43.08	6.416	22 25 33.9	11.99	19 43.8	18	8 47 14.76	5.456	19 18 22.3	18.11	18 56.8
19	7 38 16.77	6.388	22 20 42.4	12.29	19 42.4	19	8 49 25.27	5.418	19 11 6.5	18.19	18 55.0
20	7 40 49.75	6.360	22 15 43.7	12.59	19 41.0	20	8 51 34.87	5.380	19 3 48.8	18.27	18 53.2
21	7 43 22.10	6.332	22 10 38.0	12.88	19 39.6	21	8 53 43.54	5.341	18 56 29.4	18.34	18 51.4
22	7 45 53.74	6.303	22 5 25.4	13.17	19 38.2	22	8 55 51.29	5.302	18 49 8.3	18.40	18 49.6
23	7 48 24.69	6.274	22 0 6.0	13.45	19 36.8	23	8 57 58.11	5.263	18 41 46.0	18.46	18 47.8
24	7 50 54.93	6.245	21 54 39.8	13.73	19 35.3	24	9 0 4.00	5.224	18 34 22.5	18.50	18 45.9
25	7 53 24.47	6.216	21 49 7.1	13.99	19 33.9	25	9 2 8.97	5.186	18 26 58.0	18.53	18 44.1
26	7 55 53.29	6.188	21 43 28.2	14.25	19 32.4	26	9 4 12.99	5.148	18 19 32.8	18.56	18 42.2
27	7 58 21.39	6.160	21 37 43.2	14.50	19 30.9	27	9 6 16.05	5.109	18 12 7.0	18.58	18 40.3
28	8 0 48.78	6.130	21 31 52.3	14.74	19 29.4	28	9 8 18.14	5.069	18 4 40.8	18.60	18 38.4
29	8 3 15.44	6.098	21 25 55.6	14.98	19 27.9	29	9 10 19.25	5.028	17 57 14.3	18.60	18 36.5
30	8 5 41.37	6.066	21 19 53.1	15.21	19 26.4	30	9 12 19.37	4.984	17 49 47.8	18.60	18 34.5
31	8 8 6.56	6.034	21 13 45.0	15.44	19 24.9	31	9 14 18.50	4.943	17 42 21.6	18.56	18 32.6
32	8 10 31.02	6.003	+21 7 31.7	15.66	19 23.3	32	9 16 16.63	4.901	+17 34 55.9	18.56	18 30.6
Day of the Month,						Day of the Month,					
		5th.	13th.	21st.	29th.			7th.	15th.	23d.	31st.
Semidiameter		"	"	"	"	Semidiameter		"	"	"	"
Horizontal Parallax		2.9	2.9	3.0	3.1	Horizontal Parallax		3.2	3.3	3.5	3.7
		4.8	5.0	5.1	5.3			5.5	5.7	5.9	6.2

GREENWICH MEAN TIME.

NOVEMBER.

Day of Month.	Apparent Right Ascension.			Var. of R.A. for 1 Hour.	Apparent Declination.			Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.			Noon.	Noon.			Noon.	
	h	m	s	s	°	'	"	"	
1	9	16	16.63	4.901	+17	34	55.9	18.56	18 30.6
2	9	18	13.76	4.866	17	27	30.8	18.53	18 28.6
3	9	20	9.88	4.815	17	20	6.6	18.49	18 26.6
4	9	22	4.96	4.771	17	12	43.5	18.44	18 24.6
5	9	23	58.98	4.737	17	5	21.6	18.38	18 22.5
6	9	25	51.92	4.682	16	58	1.3	18.31	18 20.5
7	9	27	43.78	4.637	16	50	42.8	18.28	18 18.4
8	9	29	34.54	4.591	16	43	26.4	18.18	18 16.3
9	9	31	24.17	4.544	16	36	12.4	18.08	18 14.2
10	9	33	12.65	4.496	16	29	0.8	17.92	18 12.0
11	9	34	59.98	4.447	16	21	51.9	17.80	18 9.8
12	9	36	46.13	4.397	16	14	46.1	17.67	18 7.6
13	9	38	31.09	4.347	16	7	43.5	17.53	18 5.4
14	9	40	14.82	4.296	16	0	44.5	17.38	18 3.2
15	9	41	57.31	4.244	15	53	49.2	17.22	18 0.9
16	9	43	38.55	4.191	15	46	57.9	17.06	17 58.6
17	9	45	18.52	4.138	15	40	10.8	16.87	17 56.3
18	9	46	57.20	4.086	15	33	28.2	16.68	17 54.0
19	9	48	34.58	4.030	15	26	50.3	16.48	17 51.7
20	9	50	10.64	3.974	15	20	17.4	16.26	17 49.3
21	9	51	45.36	3.918	15	13	49.7	16.04	17 46.9
22	9	53	18.70	3.861	15	7	27.4	15.80	17 44.5
23	9	54	50.68	3.808	15	1	10.8	15.56	17 42.1
24	9	56	21.26	3.744	14	55	0.2	15.31	17 39.6
25	9	57	50.41	3.686	14	48	55.7	15.06	17 37.1
26	9	59	18.13	3.628	14	42	57.8	14.77	17 34.6
27	10	0	44.40	3.564	14	37	6.6	14.49	17 32.1
28	10	2	9.19	3.502	14	31	22.4	14.19	17 29.6
29	10	3	32.45	3.439	14	25	45.5	13.88	17 27.0
30	10	4	54.17	3.374	14	20	16.0	13.56	17 24.4
31	10	6	14.35	3.306	14	14	54.3	13.22	17 21.8
32	10	7	32.94	3.241	+14	9	40.8	12.88	17 19.2

DECEMBER.

Day of Month.	Apparent Right Ascension.			Var. of R.A. for 1 Hour.	Apparent Declination.			Var. of Dec. for 1 Hour.	Meridian Passage.	
	Noon.			Noon.	Noon.			Noon.		
	h	m	s	s	°	'	"	"		h	m
1	10	6	14.35	3.308	+14	14	54.3	13.23	17	21.8
2	10	7	32.94	3.241	14	9	40.8	12.88	17	19.2
3	10	8	49.90	3.172	14	4	35.6	12.53	17	16.5
4	10	10	5.20	3.102	13	59	39.1	12.16	17	13.8
5	10	11	18.82	3.031	13	54	51.6	11.78	17	11.1
6	10	12	30.70	2.968	13	50	13.5	11.38	17	8.4
7	10	13	40.82	2.883	13	45	44.9	10.98	17	5.6
8	10	14	49.14	2.807	13	41	26.2	10.56	17	2.8
9	10	15	55.61	2.730	13	37	17.7	10.13	16	59.9
10	10	17	0.20	2.651	13	33	19.8	9.68	16	57.0
11	10	18	2.87	2.570	13	29	32.8	9.22	16	54.1
12	10	19	3.59	2.488	13	25	56.9	8.75	16	51.2
13	10	20	2.33	2.404	13	22	32.4	8.27	16	48.2
14	10	20	59.04	2.319	13	19	19.7	7.77	16	45.2
15	10	21	53.66	2.232	13	16	19.0	7.27	16	42.1
16	10	22	46.19	2.144	13	13	30.6	6.75	16	39.0
17	10	23	36.59	2.054	13	10	54.9	6.22	16	35.9
18	10	24	24.79	1.962	13	8	32.1	5.67	16	32.7
19	10	25	10.78	1.869	13	6	22.4	5.12	16	29.5
20	10	25	54.50	1.774	13	4	26.0	4.56	16	26.3
21	10	26	35.95	1.677	13	2	43.3	3.98	16	23.0
22	10	27	15.08	1.579	13	1	14.7	3.39	16	19.7
23	10	27	51.84	1.480	13	0	0.2	2.80	16	16.3
24	10	28	26.19	1.379	12	59	0.1	2.19	16	12.9
25	10	28	58.11	1.277	12	58	14.5	1.58	16	9.5
26	10	29	27.54	1.173	12	57	43.9	0.96	16	6.0
27	10	29	54.44	1.067	12	57	28.5	0.32	16	2.5
28	10	30	18.77	0.969	12	57	28.4	0.33	15	59.0
29	10	30	40.50	0.880	12	57	43.9	0.98	15	55.4
30	10	30	59.58	0.789	12	58	15.3	1.64	15	51.7
31	10	31	15.98	0.696	12	59	2.7	2.31	15	48.0
32	10	31	29.65	0.511	+13	0	6.2	2.99	15	44.3

Day of the Month,

8th.

16th.

24th.

Semidiameter,
Horizontal Parallax,

3.8

4.0

4.3

6.6

7.0

7.4

Day of the Month,

2d.

10th.

18th.

26th.

Semidiameter
Horizontal Parallax

4.5

4.8

5.2

5.5

7.8

8.3

8.9

9.5

GREENWICH MEAN TIME.

JANUARY.						FEBRUARY.					
Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
1	h m s	s	° ' "	"	h m	1	h m s	s	° ' "	"	h m
1	22 28 27.89	1.766	-10 44 9.7	10.54	3 46.3	1	22 52 46.22	2.112	-8 16 31.3	12-06	2 8.6
2	22 29 10.44	1.781	10 39 55.6	10.64	3 43.0	2	22 53 37.02	2.120	8 11 17.3	12-11	2 5.5
3	22 29 53.36	1.796	10 35 39.0	10.74	3 39.8	3	22 54 27.98	2.127	8 6 2.0	12-16	2 2.4
4	22 30 36.33	1.810	10 31 20.0	10.84	3 36.6	4	22 55 19.11	2.134	8 0 45.3	12-22	1 59.3
5	22 31 20.24	1.824	10 26 58.8	10.94	3 33.4	5	22 56 10.40	2.140	7 55 27.4	12-27	1 56.2
6	22 32 4.20	1.838	10 22 35.2	11.03	3 30.2	6	22 57 1.82	2.146	7 50 8.3	12-32	1 53.1
7	22 32 48.49	1.852	10 18 9.2	11.13	3 27.0	7	22 57 53.39	2.152	7 44 47.9	12-37	1 50.0
8	22 33 33.11	1.866	10 13 41.0	11.22	3 23.8	8	22 58 45.10	2.158	7 39 26.3	12-42	1 47.0
9	22 34 18.05	1.879	10 9 10.6	11.31	3 20.6	9	22 59 36.95	2.164	7 34 3.6	12-47	1 43.9
10	22 35 3.30	1.892	10 4 38.0	11.40	3 17.4	10	23 0 28.93	2.169	7 28 39.9	12-52	1 40.9
11	22 35 48.86	1.906	10 0 3.2	11.49	3 14.3	11	23 1 21.03	2.174	7 23 14.9	12-57	1 37.8
12	22 36 34.71	1.919	9 55 26.3	11.58	3 11.1	12	23 2 13.26	2.179	7 17 48.9	12-61	1 34.7
13	22 37 20.88	1.930	9 50 47.4	11.67	3 7.9	13	23 3 5.61	2.184	7 12 21.8	12-65	1 31.7
14	22 38 7.33	1.942	9 46 6.3	11.76	3 4.7	14	23 3 58.06	2.189	7 6 53.7	12-69	1 28.6
15	22 38 54.07	1.954	9 41 23.2	11.84	3 1.5	15	23 4 50.63	2.192	7 1 24.6	12-73	1 25.5
16	22 39 41.08	1.966	9 36 38.1	11.92	2 58.4	16	23 5 43.30	2.196	6 55 54.6	12-77	1 22.5
17	22 40 28.36	1.976	9 31 51.1	12.00	2 55.2	17	23 6 36.06	2.200	6 50 23.7	12-81	1 19.4
18	22 41 15.92	1.987	9 27 2.1	12.08	2 52.1	18	23 7 28.92	2.204	6 44 52.0	12-85	1 16.4
19	22 42 3.73	1.997	9 22 11.2	12.16	2 48.9	19	23 8 21.87	2.208	6 39 19.4	12-89	1 13.3
20	22 42 51.80	2.007	9 17 18.4	12.24	2 45.8	20	23 9 14.91	2.211	6 33 46.0	12-91	1 10.3
21	22 43 40.12	2.017	9 12 23.7	12.32	2 42.7	21	23 10 8.92	2.214	6 28 11.8	12-94	1 7.2
22	22 44 28.69	2.027	9 7 27.2	12.39	2 39.6	22	23 11 1.20	2.217	6 22 37.0	12-97	1 4.2
23	22 45 17.49	2.037	9 2 28.9	12.46	2 36.5	23	23 11 54.45	2.220	6 17 1.4	14-00	1 1.1
24	22 46 6.52	2.046	8 57 29.0	12.53	2 33.4	24	23 12 47.76	2.222	6 11 25.2	14-02	0 58.1
25	22 46 55.77	2.054	8 52 27.4	12.60	2 30.3	25	23 13 41.13	2.225	6 5 48.4	14-05	0 55.0
26	22 47 45.24	2.064	8 47 24.1	12.67	2 27.2	26	23 14 34.54	2.227	6 0 11.0	14-07	0 52.0
27	22 48 34.92	2.072	8 42 19.1	12.74	2 24.0	27	23 15 28.00	2.229	5 54 33.0	14-09	0 48.9
28	22 49 24.80	2.082	8 37 12.6	12.81	2 20.9	28	23 16 21.51	2.231	5 48 54.6	14-11	0 45.9
29	22 50 14.87	2.090	8 32 4.5	12.87	2 17.8	29	23 17 15.05	2.232	5 43 15.7	14-13	0 42.8
30	22 51 5.14	2.098	8 26 54.9	12.92	2 14.7	30	23 18 8.61	2.233	5 37 36.4	14-15	0 39.8
31	22 51 55.59	2.106	8 21 43.8	12.99	2 11.6	31	23 19 2.20	2.234	5 31 56.8	14-17	0 36.7
32	22 52 46.22	2.112	-8 16 31.3	12-05	2 8.6	32	23 19 55.82	2.235	-5 26 16.7	14-19	0 33.7
Day of the Month,						Day of the Month,					
		1st.	11th.	21st.	31st.			1st.	11th.	21st.	31st.
Semidiameter [Polar]		16.9	16.6	16.3	16.1	Semidiameter [Polar]		16.0	15.8	15.6	15.6
Horizontal Parallax		1.6	1.5	1.5	1.5	Horizontal Parallax		1.5	1.5	1.4	1.4

GREENWICH MEAN TIME.

MARCH.						APRIL.					
Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	23 18 8.61	2.233	-5 37 36.4	14.16	0 39.8	1	23 45 41.58	2.163	-2 41 55.9	13.96	23 2.3
2	23 19 2.90	2.234	5 31 56.8	14.17	0 36.7	2	23 46 33.89	2.178	2 36 21.4	13.94	22 59.2
3	23 19 55.82	2.235	5 26 16.7	14.18	0 33.7	3	23 47 26.09	2.173	2 30 47.5	13.89	22 56.2
4	23 20 49.45	2.236	5 20 36.4	14.19	0 30.7	4	23 48 18.18	2.168	2 25 14.5	13.86	22 53.1
5	23 21 43.09	2.236	5 14 55.8	14.20	0 27.6	5	23 49 10.15	2.163	2 19 42.3	13.83	22 50.0
6	23 22 36.75	2.236	5 9 14.9	14.21	0 24.6	6	23 50 1.99	2.168	2 14 10.9	13.79	22 46.9
7	23 23 30.41	2.236	5 3 33.8	14.22	0 21.6	7	23 50 53.72	2.163	2 8 40.4	13.75	22 43.8
8	23 24 24.07	2.236	4 57 52.5	14.22	0 18.5	8	23 51 45.31	2.148	2 3 10.7	13.71	22 40.8
9	23 25 17.72	2.236	4 52 11.1	14.23	0 15.5	9	23 52 36.78	2.142	1 57 42.0	13.67	22 37.7
10	23 26 11.37	2.235	4 46 29.6	14.23	0 12.4	10	23 53 28.10	2.136	1 52 14.3	13.63	22 34.6
11	23 27 5.00	2.235	4 40 48.0	14.23	0 9.4	11	23 54 19.29	2.130	1 46 47.5	13.59	22 31.5
12	23 27 58.62	2.234	4 35 6.4	14.23	0 6.4	12	23 55 10.33	2.134	1 41 21.7	13.54	22 28.4
13	23 28 52.22	2.233	4 29 24.8	14.23	0 3.3	13	23 56 1.23	2.118	1 35 57.0	13.51	22 25.3
14	23 29 45.81	2.232	4 23 43.2	14.23	0 0.3	14	23 56 51.98	2.111	1 30 33.3	13.46	22 22.2
15	23 30 39.37	2.231	4 18 1.6	14.23	23 54.2	15	23 57 42.57	2.104	1 25 10.8	13.41	22 19.1
16	23 31 32.90	2.230	4 12 20.1	14.22	23 51.1	16	23 58 33.00	2.097	1 19 49.4	13.36	22 16.0
17	23 32 26.40	2.229	4 6 38.7	14.22	23 48.1	17	23 59 23.26	2.090	1 14 29.3	13.31	22 12.9
18	23 33 19.86	2.227	4 0 57.5	14.21	23 45.0	18	0 0 13.35	2.083	1 9 10.4	13.26	22 9.8
19	23 34 13.27	2.225	3 55 16.4	14.20	23 42.0	19	0 1 3.27	2.076	1 3 52.8	13.21	22 6.7
20	23 35 6.64	2.223	3 49 35.5	14.19	23 38.9	20	0 1 53.00	2.068	0 58 36.4	13.16	22 3.6
21	23 35 59.95	2.221	3 43 54.9	14.18	23 35.9	21	0 2 42.54	2.060	0 53 21.4	13.10	22 0.5
22	23 36 53.21	2.218	3 38 14.6	14.17	23 32.8	22	0 3 31.89	2.052	0 48 7.9	13.04	21 57.4
23	23 37 46.40	2.215	3 32 34.6	14.16	23 29.8	23	0 4 21.05	2.044	0 42 55.8	12.98	21 54.3
24	23 38 39.53	2.212	3 26 54.9	14.15	23 26.7	24	0 5 10.01	2.036	0 37 45.1	12.93	21 51.2
25	23 39 32.59	2.209	3 21 15.7	14.13	23 23.7	25	0 5 58.76	2.027	0 32 35.9	12.86	21 48.1
26	23 40 25.57	2.206	3 15 36.9	14.11	23 20.6	26	0 6 47.29	2.018	0 27 28.4	12.79	21 44.9
27	23 41 18.47	2.203	3 9 58.7	14.09	23 17.5	27	0 7 35.61	2.009	0 22 22.3	12.73	21 41.8
28	23 42 11.29	2.199	3 4 20.9	14.07	23 14.5	28	0 8 23.71	2.000	0 17 17.9	12.66	21 38.6
29	23 43 4.00	2.195	2 58 43.7	14.04	23 11.4	29	0 9 11.58	1.990	0 12 15.2	12.58	21 35.5
30	23 43 56.63	2.191	2 53 7.1	14.01	23 8.4	30	0 9 59.22	1.980	0 7 14.1	12.51	21 32.3
31	23 44 49.16	2.187	2 47 31.2	13.98	23 5.3	31	0 10 46.62	1.970	-0 2 14.8	12.44	21 29.2
32	23 45 41.58	2.183	-2 41 55.9	13.95	23 2.3	32	0 11 33.79	1.960	+0 2 42.9	12.37	21 26.0
Day of the Month,						Day of the Month,					
		1st.	11th.	21st.	31st.			1st.	11th.	21st.	31st.
Semidiameter [Polar]		15.6	15.6	15.6	15.7	Semidiameter [Polar]		15.7	15.9	16.0	16.3
Horizontal Parallax		1.4	1.4	1.4	1.4	Horizontal Parallax		1.4	1.5	1.5	1.5

GREENWICH MEAN TIME.

MAY.

JUNE.

Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
1	h m s 0 10 46.62	s 1.970	° ' " 0 2 14.8	" 12.44	h m 21 29.2	1	h m s 0 32 53.98	s 1.861	° ' " 2 15 8.1	" 9.48	h m 19 49.2
2	0 11 33.79	1.960	+ 0 2 42.9	12.37	21 26.0	2	0 33 31.25	1.844	2 18 54.1	9.36	19 45.9
3	0 12 20.71	1.950	0 7 38.7	12.30	21 22.9	3	0 34 8.11	1.827	2 22 37.3	9.24	19 42.5
4	0 13 7.39	1.940	0 12 32.7	12.22	21 19.7	4	0 34 44.56	1.810	2 26 17.5	9.12	19 39.2
5	0 13 53.81	1.929	0 17 24.8	12.14	21 16.6	5	0 35 20.58	1.498	2 29 54.8	8.99	19 35.9
6	0 14 39.98	1.918	0 22 15.1	12.06	21 13.4	6	0 35 56.19	1.475	2 33 29.0	8.86	19 32.5
7	0 15 25.89	1.907	0 27 3.5	11.98	21 10.3	7	0 36 31.37	1.457	2 37 0.3	8.73	19 29.2
8	0 16 11.53	1.896	0 31 50.0	11.90	21 7.1	8	0 37 6.12	1.439	2 40 28.6	8.60	19 25.8
9	0 16 56.91	1.886	0 36 34.5	11.82	21 3.9	9	0 37 40.41	1.420	2 43 53.6	8.47	19 22.4
10	0 17 42.02	1.874	0 41 17.0	11.74	21 0.7	10	0 38 14.27	1.401	2 47 15.6	8.34	19 19.0
11	0 18 26.85	1.862	0 45 57.5	11.66	20 57.5	11	0 38 47.67	1.382	2 50 34.5	8.21	19 15.6
12	0 19 11.39	1.850	0 50 35.7	11.56	20 54.3	12	0 39 20.61	1.363	2 53 50.2	8.08	19 12.2
13	0 19 55.65	1.838	0 55 12.0	11.47	20 51.1	13	0 39 53.08	1.343	2 57 2.5	7.96	19 8.8
14	0 20 39.61	1.826	0 59 46.1	11.38	20 47.8	14	0 40 25.08	1.323	3 0 11.7	7.81	19 5.4
15	0 21 23.28	1.813	1 4 18.0	11.29	20 44.6	15	0 40 56.60	1.303	3 3 17.5	7.67	19 2.0
16	0 22 6.64	1.800	1 8 47.7	11.20	20 41.4	16	0 41 27.62	1.283	3 6 20.0	7.53	18 58.6
17	0 22 49.69	1.787	1 13 15.2	11.10	20 38.2	17	0 41 58.14	1.262	3 9 19.1	7.39	18 55.2
18	0 23 32.42	1.774	1 17 40.3	11.00	20 35.0	18	0 42 28.17	1.241	3 12 14.8	7.26	18 51.8
19	0 24 14.83	1.760	1 22 3.1	10.90	20 31.7	19	0 42 57.68	1.219	3 15 7.0	7.11	18 48.3
20	0 24 56.92	1.746	1 26 23.5	10.80	20 28.5	20	0 43 26.68	1.197	3 17 55.6	6.96	18 44.9
21	0 25 38.66	1.732	1 30 41.5	10.70	20 25.3	21	0 43 55.14	1.176	3 20 40.3	6.81	18 41.4
22	0 26 20.07	1.718	1 34 57.0	10.60	20 22.1	22	0 44 23.09	1.153	3 23 22.3	6.66	18 37.9
23	0 27 1.12	1.703	1 39 10.0	10.50	20 18.8	23	0 44 50.49	1.130	3 26 0.2	6.51	18 34.4
24	0 27 41.82	1.688	1 43 20.4	10.39	20 15.6	24	0 45 17.35	1.107	3 28 34.4	6.36	18 30.9
25	0 28 22.16	1.673	1 47 28.3	10.28	20 12.3	25	0 45 43.66	1.084	3 31 4.9	6.20	18 27.4
26	0 29 2.13	1.658	1 51 33.5	10.17	20 9.0	26	0 46 9.41	1.061	3 33 31.8	6.04	18 23.9
27	0 29 41.73	1.642	1 55 36.1	10.06	20 5.7	27	0 46 43.60	1.038	3 35 54.9	5.88	18 20.5
28	0 30 20.95	1.626	1 59 36.0	9.95	20 2.4	28	0 46 59.23	1.014	3 38 14.1	5.73	18 16.9
29	0 30 59.79	1.610	2 3 33.1	9.84	19 59.1	29	0 47 23.28	0.990	3 40 29.6	5.58	18 13.4
30	0 31 38.25	1.594	2 7 27.6	9.73	19 55.8	30	0 47 46.76	0.966	3 42 41.2	5.40	18 9.8
31	0 32 16.32	1.578	2 11 19.3	9.60	19 52.5	31	0 48 9.65	0.942	3 44 49.0	5.24	18 6.2
32	0 32 53.98	1.561	+ 2 15 8.1	9.48	19 49.2	32	0 48 31.96	0.917	+ 3 46 52.9	5.08	18 2.6
Day of the Month,		1st.	11th.	21st.	31st.	Day of the Month,		1st.	11th.	21st.	31st.
Semidiameter [Polar]		16.3	16.6	16.9	17.3	Semidiameter [Polar]		17.3	17.8	18.3	18.9
Horizontal Parallax		1.5	1.5	1.6	1.6	Horizontal Parallax		1.6	1.6	1.7	1.7

GREENWICH MEAN TIME.

SEPTEMBER.

OCTOBER.

Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
Noon.	Noon.	Noon.	Noon.	Noon.	Noon.	Noon.	Noon.	Noon.	Noon.	Noon.	Noon.
^h ^m ^s	^s	[°] ['] ["]	^h ^m ^s	^h ^m ^s	^h ^m ^s	^h ^m ^s	^s	[°] ['] ["]	^h ^m ^s	^h ^m ^s	^h ^m ^s
1	0 49 47.41	0.894	+ 3 37 4.9	5.74	14 3.6	1	0 36 41.88	1.226	+ 2 10 15.3	7.92	11 52.5
2	0 49 27.33	0.848	3 34 45.1	5.88	13 59.3	2	0 36 12.18	1.237	2 7 5.4	7.91	11 48.1
3	0 49 6.69	0.872	3 32 21.9	6.02	13 55.0	3	0 35 42.50	1.226	2 3 55.9	7.89	11 43.7
4	0 48 45.49	0.896	3 29 55.5	6.15	13 50.7	4	0 35 12.83	1.235	2 0 47.0	7.86	11 39.3
5	0 48 23.74	0.917	3 27 25.9	6.28	13 46.4	5	0 34 43.22	1.223	1 57 38.8	7.82	11 34.9
6	0 48 1.46	0.929	3 24 53.2	6.41	13 42.1	6	0 34 13.66	1.229	1 54 31.5	7.78	11 30.4
7	0 47 38.66	0.900	3 22 17.5	6.53	13 37.8	7	0 33 44.20	1.225	1 51 25.2	7.74	11 26.0
8	0 47 15.36	0.961	3 19 39.0	6.66	13 33.5	8	0 33 14.85	1.220	1 48 20.1	7.69	11 21.6
9	0 46 51.56	1.001	3 16 57.7	6.77	13 29.2	9	0 32 45.63	1.214	1 45 16.3	7.64	11 17.2
10	0 46 27.29	1.021	3 14 13.7	6.88	13 24.8	10	0 32 16.56	1.207	1 42 13.8	7.58	11 12.8
11	0 46 2.55	1.040	3 11 27.2	6.98	13 20.5	11	0 31 47.68	1.199	1 39 13.0	7.51	11 8.4
12	0 45 37.38	1.068	3 8 38.2	7.08	13 16.2	12	0 31 19.00	1.190	1 36 13.9	7.43	11 4.0
13	0 45 11.79	1.075	3 5 47.0	7.18	13 11.8	13	0 30 50.55	1.180	1 33 16.7	7.35	10 59.6
14	0 44 45.79	1.092	3 2 53.4	7.27	13 7.5	14	0 30 22.34	1.169	1 30 21.5	7.26	10 55.2
15	0 44 19.40	1.108	2 59 57.8	7.35	13 3.1	15	0 29 54.40	1.158	1 27 28.4	7.17	10 50.8
16	0 43 52.64	1.123	2 57 0.2	7.43	12 58.7	16	0 29 26.76	1.146	1 24 37.7	7.07	10 46.4
17	0 43 25.54	1.137	2 54 0.7	7.51	12 54.3	17	0 28 59.43	1.133	1 21 49.3	6.96	10 42.0
18	0 42 58.11	1.149	2 50 59.6	7.58	12 49.9	18	0 28 32.43	1.119	1 19 3.6	6.85	10 37.6
19	0 42 30.38	1.161	2 47 57.0	7.64	12 45.5	19	0 28 5.80	1.108	1 16 20.6	6.74	10 33.2
20	0 42 2.37	1.172	2 44 52.9	7.70	12 41.1	20	0 27 39.54	1.096	1 13 40.4	6.62	10 28.8
21	0 41 34.10	1.182	2 41 47.5	7.75	12 36.7	21	0 27 13.67	1.088	1 11 3.1	6.49	10 24.5
22	0 41 5.59	1.192	2 38 41.0	7.80	12 32.3	22	0 26 48.23	1.080	1 8 29.0	6.36	10 20.1
23	0 40 36.96	1.201	2 35 33.5	7.84	12 27.9	23	0 26 23.24	1.062	1 5 58.0	6.22	10 15.8
24	0 40 7.94	1.209	2 32 25.2	7.87	12 23.5	24	0 25 58.68	1.044	1 3 30.3	6.08	10 11.4
25	0 39 38.86	1.216	2 29 16.1	7.89	12 19.0	25	0 25 34.60	0.996	1 1 6.0	5.94	10 7.1
26	0 39 9.61	1.221	2 26 6.5	7.91	12 14.6	26	0 25 11.00	0.975	0 58 45.2	5.79	10 2.8
27	0 38 40.23	1.226	2 22 56.5	7.92	12 10.2	27	0 24 47.90	0.963	0 56 28.1	5.64	9 58.5
28	0 38 10.75	1.230	2 19 46.2	7.93	12 5.8	28	0 24 25.32	0.980	0 54 14.6	5.49	9 54.2
29	0 37 41.18	1.233	2 16 35.9	7.93	12 1.3	29	0 24 3.28	0.907	0 52 4.9	5.33	9 49.9
30	0 37 11.55	1.235	2 13 25.5	7.93	11 56.9	30	0 23 41.78	0.864	0 49 59.0	5.17	9 45.6
31	0 36 41.88	1.236	2 10 15.3	7.92	11 52.5	31	0 23 20.84	0.800	0 47 57.1	5.00	9 41.4
32	0 36 12.18	1.237	+ 2 7 5.4	7.91	11 48.1	32	0 23 0.48	0.826	+ 0 45 59.3	4.82	9 37.1

Day of the Month,	1st.	11th.	21st.	31st.	Day of the Month,	1st.	11th.	21st.	31st.
Semidiameter [<i>Polar</i>]	22.7	23.2	23.5	23.6	Semidiameter [<i>Polar</i>]	23.6	23.4	23.2	22.8
Horizontal Parallax	2.1	2.1	2.2	2.2	Horizontal Parallax	2.2	2.2	2.1	2.1

GREENWICH MEAN TIME.

NOVEMBER.

DECEMBER.

Day of Month.	NOVEMBER.					Day of Month.	DECEMBER.				
	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.		Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.	Noon.	Noon.
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	0 23 0.48	0.836	+0 45 59.3	4.83	9 37.1	1	0 18 6.55	0.066	+0 22 59.1	1.17	7 34.4
2	0 22 40.71	0.811	0 44 5.6	4.66	9 32.8	2	0 18 8.27	0.068	0 23 29.7	1.38	7 30.5
3	0 22 21.53	0.786	0 42 16.0	4.48	9 28.6	3	0 18 10.75	0.120	0 24 5.2	1.59	7 26.6
4	0 22 2.97	0.760	0 40 30.8	4.30	9 24.3	4	0 18 13.99	0.162	0 24 45.7	1.80	7 22.7
5	0 21 45.03	0.734	0 38 49.8	4.12	9 20.1	5	0 18 17.99	0.184	0 25 31.1	2.00	7 18.8
6	0 21 27.73	0.707	0 37 13.2	3.94	9 15.9	6	0 18 22.75	0.216	0 26 21.5	2.20	7 15.0
7	0 21 11.07	0.680	0 35 41.1	3.75	9 11.7	7	0 18 28.26	0.246	0 27 16.7	2.40	7 11.2
8	0 20 55.07	0.653	0 34 13.5	3.56	9 7.5	8	0 18 34.52	0.277	0 28 16.8	2.60	7 7.4
9	0 20 39.74	0.624	0 32 50.5	3.37	9 3.3	9	0 18 41.54	0.308	0 29 21.7	2.80	7 3.6
10	0 20 25.08	0.596	0 31 32.0	3.18	8 59.1	10	0 18 49.30	0.339	0 30 31.5	3.00	6 59.8
11	0 20 11.11	0.566	0 30 18.3	2.98	8 55.0	11	0 18 57.81	0.370	0 31 46.0	3.20	6 56.0
12	0 19 57.85	0.537	0 29 9.4	2.78	8 50.8	12	0 19 7.07	0.401	0 33 5.3	3.40	6 52.2
13	0 19 45.30	0.508	0 28 5.2	2.59	8 46.7	13	0 19 17.06	0.432	0 34 29.4	3.60	6 49.5
14	0 19 33.46	0.478	0 27 5.8	2.39	8 42.6	14	0 19 27.79	0.463	0 35 58.2	3.80	6 46.7
15	0 19 22.35	0.448	0 26 11.3	2.18	8 38.5	15	0 19 39.26	0.493	0 37 31.7	4.00	6 44.0
16	0 19 11.96	0.418	0 25 21.8	1.98	8 34.4	16	0 19 51.46	0.523	0 39 9.9	4.19	6 37.2
17	0 19 2.32	0.387	0 24 37.2	1.77	8 30.3	17	0 20 4.38	0.553	0 40 52.7	4.38	6 33.5
18	0 18 53.42	0.356	0 23 57.5	1.56	8 26.3	18	0 20 18.01	0.583	0 42 40.0	4.57	6 29.8
19	0 18 45.26	0.325	0 23 22.8	1.36	8 22.2	19	0 20 32.36	0.613	0 44 31.9	4.76	6 26.1
20	0 18 37.85	0.294	0 22 53.2	1.14	8 18.2	20	0 20 47.42	0.642	0 46 28.3	4.95	6 22.4
21	0 18 31.20	0.263	0 22 28.6	0.93	8 14.1	21	0 21 3.18	0.671	0 48 29.1	5.13	6 18.7
22	0 18 25.31	0.232	0 22 9.0	0.72	8 10.1	22	0 21 19.63	0.700	0 50 34.3	5.31	6 15.0
23	0 18 20.18	0.200	0 21 54.5	0.51	8 6.1	23	0 21 36.76	0.728	0 52 43.8	5.49	6 11.4
24	0 18 15.81	0.168	0 21 45.0	0.30	8 2.1	24	0 21 54.58	0.756	0 54 57.6	5.67	6 7.8
25	0 18 12.20	0.136	0 21 40.5	-0.09	7 58.1	25	0 22 13.07	0.784	0 57 15.7	5.86	6 4.2
26	0 18 9.35	0.104	0 21 41.1	+0.12	7 54.1	26	0 22 32.23	0.812	0 59 33.0	6.02	6 0.6
27	0 18 7.27	0.072	0 21 46.7	0.32	7 50.1	27	0 22 52.05	0.839	1 2 4.5	6.19	5 57.0
28	0 18 5.94	0.040	0 21 57.3	0.54	7 46.1	28	0 23 12.52	0.866	1 4 35.1	6.36	5 53.4
29	0 18 5.38	-0.008	0 22 12.9	0.75	7 42.2	29	0 23 33.64	0.893	1 7 9.7	6.53	5 49.8
30	0 18 5.58	+0.024	0 22 33.5	0.96	7 38.3	30	0 23 55.40	0.920	1 9 48.3	6.69	5 46.2
31	0 18 6.55	0.066	0 22 59.1	1.17	7 34.4	31	0 24 17.79	0.946	1 12 30.9	6.85	5 42.7
32	0 18 8.27	0.098	+0 23 29.7	1.38	7 30.5	32	0 24 40.81	0.971	+1 15 17.3	7.00	5 39.2

Day of the Month,	1st.	11th.	21st.	31st.	Day of the Month,	1st.	11th.	21st.	31st.
Semidiameter [Polar]	22.7	22.2	21.6	20.9	Semidiameter [Polar]	20.9	20.2	19.5	18.9
Horizontal Parallax	2.1	2.1	2.0	1.9	Horizontal Parallax	1.9	1.9	1.8	1.7

GREENWICH MEAN TIME.

JANUARY.

Day of Month.	Apparent Right Ascension.			Var. of R.A. for 1 Hour.	Apparent Declination.			Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.				Noon.				
	h	m	s		°	'	"			h	m
1	15	59	23.51	1.061	18	38	40.7	2.87	21 14.6
2	15	59	53.63	1.043	18	39	49.1	2.83	21 11.1
3	16	0	18.55	1.034	18	40	56.5	2.79	21 7.6
4	16	0	43.27	1.025	18	42	3.0	2.75	21 4.1
5	16	1	7.77	1.016	18	43	8.5	2.71	21 0.5
6	16	1	32.05	1.007	18	44	13.0	2.67	20 57.0
7	16	1	56.11	0.998	18	45	16.5	2.63	20 53.5
8	16	2	19.95	0.989	18	46	19.0	2.58	20 49.9
9	16	2	43.57	0.979	18	47	20.5	2.54	20 46.4
10	16	3	6.95	0.969	18	48	21.0	2.50	20 42.8
11	16	3	30.08	0.960	18	49	20.5	2.46	20 39.3
12	16	3	52.96	0.948	18	50	19.0	2.42	20 35.7
13	16	4	15.59	0.938	18	51	16.5	2.37	20 32.2
14	16	4	37.97	0.927	18	52	12.9	2.33	20 28.6
15	16	5	0.09	0.916	18	53	8.3	2.29	20 25.0
16	16	5	21.95	0.905	18	54	2.6	2.24	20 21.5
17	16	5	43.55	0.894	18	54	55.9	2.20	20 17.9
18	16	6	4.88	0.883	18	55	48.1	2.15	20 14.3
19	16	6	25.93	0.871	18	56	39.3	2.11	20 10.7
20	16	6	46.70	0.859	18	57	29.4	2.06	20 7.1
21	16	7	7.18	0.847	18	58	18.4	2.02	20 3.5
22	16	7	27.36	0.835	18	59	6.4	1.98	19 59.9
23	16	7	47.25	0.823	18	59	53.3	1.94	19 56.3
24	16	8	6.84	0.810	19	0	39.1	1.89	19 52.7
25	16	8	26.12	0.797	19	1	23.8	1.84	19 49.1
26	16	8	45.09	0.784	19	2	7.4	1.80	19 45.5
27	16	9	3.74	0.771	19	2	50.0	1.75	19 41.8
28	16	9	22.08	0.758	19	3	31.5	1.71	19 38.2
29	16	9	40.10	0.744	19	4	11.9	1.66	19 34.6
30	16	9	57.79	0.730	19	4	51.2	1.61	19 30.9
31	16	10	15.14	0.716	19	5	29.4	1.57	19 27.3
32	16	10	32.16	0.702	19	6	6.5	1.52	19 23.6

FEBRUARY.

Day of Month.	Apparent Right Ascension.			Var. of R.A. for 1 Hour.	Apparent Declination.			Var. of Dec. for 1 Hour.	Meridian Passage.	
	Noon.				Noon.					Noon.
	h	m	s		s	°	'			"	h	m
1	16	10	32.16	0.702	19	6	6.5	1.52	19	23.6
2	16	10	48.84	0.688	19	6	42.5	1.48	19	20.0
3	16	11	5.18	0.674	19	7	17.4	1.43	19	16.3
4	16	11	21.17	0.660	19	7	51.2	1.39	19	12.6
5	16	11	36.81	0.644	19	8	23.9	1.34	19	8.9
6	16	11	52.10	0.630	19	8	55.4	1.29	19	5.3
7	16	12	7.04	0.616	19	9	25.8	1.24	19	1.6
8	16	12	21.62	0.600	19	9	55.2	1.20	18	57.9
9	16	12	35.84	0.585	19	10	23.5	1.16	18	54.2
10	16	12	49.69	0.569	19	10	50.7	1.11	18	50.5
11	16	13	3.17	0.554	19	11	16.8	1.06	18	46.8
12	16	13	16.28	0.539	19	11	41.8	1.02	18	43.1
13	16	13	29.02	0.523	19	12	5.7	0.97	18	39.3
14	16	13	41.38	0.507	19	12	28.5	0.93	18	35.6
15	16	13	53.35	0.491	19	12	50.2	0.88	18	31.9
16	16	14	4.94	0.475	19	13	10.8	0.84	18	28.1
17	16	14	16.14	0.459	19	13	30.3	0.79	18	24.4
18	16	14	26.95	0.442	19	13	48.7	0.74	18	20.6
19	16	14	37.37	0.426	19	14	6.0	0.70	18	16.8
20	16	14	47.39	0.409	19	14	22.2	0.65	18	13.1
21	16	14	57.00	0.392	19	14	37.3	0.61	18	9.3
22	16	15	6.21	0.375	19	14	51.3	0.56	18	5.5
23	16	15	15.02	0.358	19	15	4.2	0.52	18	1.7
24	16	15	23.42	0.341	19	15	16.1	0.47	17	57.9
25	16	15	31.41	0.324	19	15	26.9	0.43	17	54.1
26	16	15	38.98	0.307	19	15	36.6	0.38	17	50.3
27	16	15	46.14	0.290	19	15	45.2	0.34	17	46.5
28	16	15	52.89	0.272	19	15	52.7	0.29	17	42.7
29	16	15	59.22	0.255	19	15	59.1	0.24	17	38.8
30	16	16	5.13	0.238	19	16	4.4	0.20	17	35.0
31	16	16	10.62	0.220	19	16	8.6	0.15	17	31.1
32	16	16	15.69	0.203	19	16	11.8	0.11	17	27.3

Day of the Month,

1st.

11th.

21st.

31st.

Day of the Month,

1st.

11th.

21st.

31st.

Semidiameter

7.3

7.4

7.5

7.6

Semidiameter

7.6

7.7

7.8

8.0

Horizontal Parallax

0.8

0.8

0.8

0.8

Horizontal Parallax

0.8

0.9

0.9

0.9

MARCH

Day of Month.	Apparent Right Ascension.			Var. of R.A. for 1 Hour.	Apparent Declination.			Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.				Noon.				
	h	m	s	s	°	'	"	"	h m
1	16	16	5.13	0.298	19	16	4.4	0.29	17 35.0
2	16	16	10.62	0.299	19	16	8.6	0.19	17 31.1
3	16	16	15.69	0.298	19	16	11.8	0.11	17 27.3
4	16	16	20.35	0.188	19	16	13.9	0.07	17 23.4
5	16	16	24.59	0.185	19	16	15.0	0.02	17 19.6
6	16	16	28.41	0.130	19	16	15.0	+0.02	17 15.7
7	16	16	31.81	0.132	19	16	14.0	0.04	17 11.8
8	16	16	34.78	0.115	19	16	11.9	0.11	17 7.9
9	16	16	37.33	0.098	19	16	8.8	0.15	17 4.0
10	16	16	39.46	0.090	19	16	4.6	0.20	17 0.1
11	16	16	41.17	0.098	19	15	59.4	0.24	16 56.2
12	16	16	42.46	0.045	19	15	53.2	0.28	16 52.3
13	16	16	43.32	0.027	19	15	46.0	0.32	16 48.4
14	16	16	43.76	+0.010	19	15	37.8	0.36	16 44.4
15	16	16	43.78	-0.008	19	15	28.6	0.40	16 40.5
16	16	16	43.37	0.008	19	15	18.4	0.45	16 36.6
17	16	16	42.54	0.048	19	15	7.1	0.49	16 32.6
18	16	16	41.29	0.091	19	14	54.8	0.53	16 28.7
19	16	16	39.62	0.078	19	14	41.6	0.57	16 24.7
20	16	16	37.53	0.098	19	14	27.4	0.61	16 20.7
21	16	16	35.02	0.113	19	14	12.2	0.65	16 16.7
22	16	16	32.10	0.120	19	13	56.0	0.69	16 12.8
23	16	16	28.76	0.148	19	13	38.9	0.73	16 8.8
24	16	16	25.00	0.105	19	13	20.8	0.77	16 4.8
25	16	16	20.83	0.182	19	13	1.7	0.81	16 0.8
26	16	16	16.25	0.199	19	12	41.7	0.86	15 56.8
27	16	16	11.27	0.296	19	12	20.8	0.89	15 52.7
28	16	16	5.89	0.283	19	11	59.0	0.98	15 48.7
29	16	16	0.11	0.249	19	11	36.2	0.97	15 44.7
30	16	15	53.93	0.296	19	11	12.5	1.01	15 40.6
31	16	15	47.36	0.292	19	10	47.9	1.04	15 36.6
32	16	15	40.40	0.298	19	10	22.5	1.08	15 32.5

APRIL

Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
1	16 15 40.40	0.306	-19 10 22.5	1.08	15 32.5
2	16 15 33.06	0.314	19 9 56.2	1.11	15 28.5
3	16 15 25.34	0.322	19 9 20.1	1.13	15 24.4
4	16 15 17.25	0.336	19 9 1.1	1.19	15 20.3
5	16 15 8.78	0.351	19 8 32.2	1.23	15 16.3
6	16 14 50.94	0.378	19 8 2.5	1.29	15 12.2
7	16 14 50.74	0.391	19 7 32.0	1.22	15 8.1
8	16 14 41.18	0.406	19 7 0.7	1.32	15 4.0
9	16 14 31.27	0.430	19 6 28.6	1.35	14 50.9
10	16 14 21.01	0.456	19 5 55.8	1.32	14 55.8
11	16 14 10.40	0.449	19 5 22.2	1.41	14 51.7
12	16 13 59.45	0.453	19 4 47.9	1.44	14 47.6
13	16 13 48.16	0.477	19 4 12.9	1.47	14 43.5
14	16 13 36.54	0.491	19 3 37.1	1.51	14 39.3
15	16 13 24.60	0.504	19 3 0.6	1.54	14 35.2
16	16 13 12.34	0.518	19 2 23.4	1.56	14 31.1
17	16 12 50.76	0.531	19 1 45.5	1.59	14 26.9
18	16 12 46.87	0.543	19 1 6.9	1.69	14 22.8
19	16 12 33.68	0.556	19 0 27.7	1.64	14 18.6
20	16 12 20.20	0.568	18 59 47.8	1.68	14 14.5
21	16 12 6.44	0.579	18 59 7.3	1.70	14 10.3
22	16 11 52.40	0.591	18 58 26.2	1.72	14 6.1
23	16 11 38.08	0.602	18 57 44.6	1.74	14 2.0
24	16 11 23.50	0.613	18 57 2.4	1.77	13 57.8
25	16 11 8.66	0.623	18 56 19.6	1.79	13 53.6
26	16 10 53.58	0.633	18 55 36.3	1.81	13 49.4
27	16 10 38.26	0.643	18 54 52.6	1.83	13 45.2
28	16 10 22.70	0.653	18 54 8.4	1.85	13 41.0
29	16 10 6.92	0.662	18 53 23.7	1.87	13 36.8
30	16 9 50.92	0.671	18 52 38.6	1.89	13 32.6
31	16 9 34.72	0.679	18 51 53.0	1.91	13 28.4
32	16 9 18.32	0.687	-18 51 7.0	1.93	13 24.2

Day of the Month,	1st.	11th.	21st.	31st.
Semidiameter	8.0	8.1	8.2	8.3
Horizontal Parallax	0.9	0.9	0.9	0.9

Day of the Month,	1st.	11th.	21st.	31st.
Semidiameter	8.4	8.5	8.6	8.6
Horizontal Parallax	0.9	0.9	0.9	0.9

GREENWICH MEAN TIME.

MAY.						JUNE.					
Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	^h ^m ^s	^s	[°] ['] ["]	["]	^h ^m		^h ^m ^s	^s	[°] ['] ["]	["]	^h ^m
1	16 9 34.72	0.679	18 51 53.0	1.91	13 28.4	1	16 0 17.46	0.766	18 26 57.5	1.98	11 17.3
2	16 9 18.32	0.687	18 51 7.0	1.88	13 24.2	2	15 59 59.35	0.762	18 26 11.0	1.93	11 13.1
3	16 9 1.73	0.693	18 50 20.6	1.94	13 20.0	3	15 59 41.34	0.748	18 25 24.9	1.91	11 8.8
4	16 8 44.96	0.703	18 49 33.9	1.95	13 15.8	4	15 59 23.43	0.744	18 24 39.3	1.89	11 4.6
5	16 8 28.01	0.710	18 48 46.9	1.96	13 11.6	5	15 59 5.63	0.739	18 23 54.1	1.87	11 0.4
6	16 8 10.90	0.716	18 47 59.6	1.96	13 7.4	6	15 58 47.96	0.734	18 23 9.4	1.85	10 56.2
7	16 7 53.63	0.723	18 47 12.0	1.99	13 3.2	7	15 58 30.42	0.729	18 22 25.2	1.83	10 51.9
8	16 7 36.21	0.729	18 46 24.2	2.00	12 59.0	8	15 58 13.01	0.722	18 21 41.5	1.81	10 47.7
9	16 7 18.65	0.734	18 45 36.1	2.01	12 54.7	9	15 57 55.74	0.716	18 20 58.4	1.79	10 43.5
10	16 7 0.96	0.739	18 44 47.8	2.02	12 50.5	10	15 57 38.62	0.710	18 20 15.8	1.76	10 39.3
11	16 6 43.15	0.744	18 43 59.2	2.03	12 46.3	11	15 57 21.66	0.703	18 19 33.8	1.74	10 35.1
12	16 6 25.23	0.749	18 43 10.4	2.04	12 42.0	12	15 57 4.88	0.696	18 18 52.4	1.71	10 30.9
13	16 6 7.21	0.753	18 42 21.5	2.04	12 37.8	13	15 56 48.28	0.688	18 18 11.7	1.68	10 26.7
14	16 5 49.09	0.757	18 41 32.5	2.04	12 33.6	14	15 56 31.86	0.680	18 17 31.6	1.66	10 22.5
15	16 5 30.88	0.760	18 40 43.4	2.05	12 29.3	15	15 56 15.63	0.673	18 16 52.2	1.63	10 18.3
16	16 5 12.59	0.763	18 39 54.2	2.06	12 25.1	16	15 55 59.61	0.668	18 16 13.6	1.59	10 14.1
17	16 4 54.24	0.766	18 39 4.9	2.06	12 20.9	17	15 55 43.80	0.664	18 15 35.8	1.56	10 9.9
18	16 4 35.83	0.769	18 38 15.6	2.06	12 16.6	18	15 55 28.20	0.645	18 14 58.7	1.53	10 5.7
19	16 4 17.37	0.770	18 37 26.3	2.05	12 12.4	19	15 55 12.83	0.635	18 14 22.4	1.50	10 1.5
20	16 3 58.87	0.771	18 36 37.0	2.06	12 8.2	20	15 54 57.70	0.626	18 13 46.9	1.46	9 57.3
21	16 3 40.34	0.772	18 35 47.8	2.06	12 3.9	21	15 54 42.81	0.615	18 13 12.2	1.43	9 53.2
22	16 3 21.79	0.773	18 34 58.7	2.04	11 59.7	22	15 54 28.17	0.606	18 12 38.4	1.39	9 49.0
23	16 3 3.22	0.774	18 34 9.7	2.04	11 55.4	23	15 54 13.78	0.594	18 12 5.5	1.35	9 44.8
24	16 2 44.66	0.773	18 33 20.8	2.04	11 51.2	24	15 53 59.65	0.583	18 11 33.5	1.31	9 40.7
25	16 2 26.12	0.772	18 32 32.0	2.03	11 47.0	25	15 53 45.79	0.572	18 11 2.4	1.28	9 36.5
26	16 2 7.60	0.771	18 31 43.4	2.02	11 42.7	26	15 53 32.21	0.560	18 10 32.3	1.24	9 32.3
27	16 1 49.11	0.770	18 30 55.0	2.01	11 38.5	27	15 53 18.91	0.548	18 10 3.1	1.20	9 28.2
28	16 1 30.66	0.768	18 30 6.9	2.00	11 34.3	28	15 53 5.90	0.535	18 9 24.9	1.15	9 24.0
29	16 1 12.26	0.766	18 29 19.1	1.99	11 30.0	29	15 52 53.19	0.523	18 9 7.7	1.11	9 19.9
30	16 0 53.92	0.763	18 28 31.6	1.97	11 25.8	30	15 52 40.78	0.511	18 8 41.6	1.07	9 15.7
31	16 0 35.65	0.760	18 27 44.4	1.96	11 21.5	31	15 52 28.67	0.498	18 8 16.5	1.03	9 11.6
32	16 0 17.46	0.756	18 26 57.5	1.95	11 17.3	32	15 52 16.87	0.486	18 7 52.4	0.98	9 7.5

GREENWICH MEAN TIME.

JULY.						AUGUST.					
Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	15 52 23.67	0.498	18 8 16.5	1.08	9 11.6	1	15 49 6.37	0.036	18 4 56.9	0.54	7 6.4
2	15 52 16.87	0.485	18 7 52.4	0.98	9 7.5	2	15 49 5.95	-0.008	18 5 10.5	0.59	7 2.5
3	15 52 5.38	0.472	18 7 29.4	0.84	9 3.4	3	15 49 5.93	+0.007	18 5 25.3	0.64	6 58.6
4	15 51 54.21	0.459	18 7 7.5	0.69	8 59.3	4	15 49 6.31	0.024	18 5 41.4	0.70	6 54.6
5	15 51 43.36	0.445	18 6 46.7	0.54	8 55.1	5	15 49 7.09	0.041	18 5 58.7	0.76	6 50.7
6	15 51 32.84	0.431	18 6 27.0	0.40	8 51.0	6	15 49 8.26	0.087	18 6 17.3	0.80	6 46.8
7	15 51 22.65	0.418	18 6 8.4	0.25	8 46.9	7	15 49 9.83	0.074	18 6 37.2	0.84	6 42.9
8	15 51 12.79	0.404	18 5 50.9	0.10	8 42.9	8	15 49 11.80	0.090	18 6 58.3	0.90	6 39.0
9	15 51 3.27	0.389	18 5 34.6	0.06	8 38.8	9	15 49 14.17	0.107	18 7 20.6	0.96	6 35.1
10	15 50 54.10	0.375	18 5 19.4	0.01	8 34.7	10	15 49 16.94	0.124	18 7 44.2	1.01	6 31.2
11	15 50 45.27	0.361	18 5 5.4	0.06	8 30.6	11	15 49 20.11	0.140	18 8 9.1	1.06	6 27.4
12	15 50 36.79	0.346	18 4 52.6	0.31	8 26.5	12	15 49 23.67	0.157	18 8 35.2	1.11	6 23.5
13	15 50 28.67	0.331	18 4 41.0	0.46	8 22.5	13	15 49 27.63	0.173	18 9 2.5	1.16	6 19.6
14	15 50 20.92	0.315	18 4 30.6	0.41	8 18.4	14	15 49 31.99	0.190	18 9 31.0	1.21	6 15.8
15	15 50 13.54	0.300	18 4 21.4	0.36	8 14.4	15	15 49 36.75	0.206	18 10 0.7	1.26	6 11.9
16	15 50 6.53	0.285	18 4 13.4	0.31	8 10.3	16	15 49 41.90	0.223	18 10 31.6	1.31	6 8.1
17	15 49 59.88	0.269	18 4 6.6	0.26	8 6.3	17	15 49 47.45	0.240	18 11 3.7	1.36	6 4.2
18	15 49 53.60	0.254	18 4 1.0	0.21	8 2.3	18	15 49 53.40	0.256	18 11 37.0	1.41	6 0.4
19	15 49 47.70	0.238	18 3 56.7	0.16	7 58.2	19	15 49 59.74	0.272	18 12 11.5	1.46	5 56.6
20	15 49 42.18	0.222	18 3 53.7	0.10	7 54.2	20	15 50 6.47	0.289	18 12 47.2	1.51	5 52.8
21	15 49 37.05	0.206	18 3 52.0	+0.05	7 50.2	21	15 50 13.60	0.305	18 12 24.1	1.56	5 49.0
22	15 49 32.31	0.190	18 3 51.5	-0.01	7 46.2	22	15 50 21.12	0.321	18 14 2.1	1.61	5 45.2
23	15 49 27.95	0.174	18 3 52.3	0.06	7 42.2	23	15 50 29.03	0.337	18 14 41.2	1.66	5 41.4
24	15 49 23.98	0.157	18 3 54.4	0.11	7 38.2	24	15 50 37.32	0.353	18 15 21.4	1.70	5 37.6
25	15 49 20.40	0.141	18 3 57.7	0.15	7 34.2	25	15 50 45.99	0.369	18 16 2.7	1.74	5 33.8
26	15 49 17.21	0.125	18 4 2.3	0.22	7 30.2	26	15 50 55.04	0.385	18 16 45.1	1.79	5 30.0
27	15 49 14.41	0.108	18 4 8.2	0.27	7 26.2	27	15 51 4.47	0.401	18 17 28.6	1.84	5 26.2
28	15 49 12.01	0.092	18 4 15.4	0.33	7 22.2	28	15 51 14.28	0.417	18 18 13.2	1.88	5 22.5
29	15 49 10.01	0.075	18 4 23.9	0.38	7 18.3	29	15 51 24.47	0.433	18 18 58.9	1.93	5 18.7
30	15 49 8.40	0.059	18 4 33.6	0.43	7 14.3	30	15 51 35.03	0.447	18 19 45.6	1.97	5 14.9
31	15 49 7.19	0.042	18 4 44.6	0.49	7 10.4	31	15 51 45.95	0.463	18 20 33.3	2.01	5 11.2
32	15 49 6.37	0.026	18 4 56.9	0.54	7 6.4	32	15 51 57.24	0.478	18 21 22.0	2.06	5 7.4
Day of the Month,						Day of the Month,					
	1st.	11th.	21st.	31st.			1st.	11th.	21st.	31st.	
Semidiameter	"	"	"	"		Semidiameter	"	"	"	"	
Horizontal Parallax	8.5	8.4	8.3	8.2		Horizontal Parallax	8.1	8.0	7.9	7.8	
	0.9	0.9	0.9	0.9			0.9	0.9	0.9	0.8	

GREENWICH MEAN TIME.											
SEPTEMBER.						OCTOBER.					
Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"			h m	h m s	s	° ' "	
1	15 51 57.24	0.478	18 21 22.0	2.06	5 7.4	1	16 0 13.89	0.881	18 52 17.3	2.90	3 17.8
2	15 52 8.89	0.493	18 22 11.7	2.09	5 3.7	2	16 0 35.18	0.893	18 53 29.4	2.01	3 14.2
3	15 52 20.91	0.808	18 23 2.4	2.13	5 0.0	3	16 0 56.74	0.904	18 54 41.9	2.08	3 10.6
4	15 52 33.29	0.823	18 23 54.1	2.17	4 56.2	4	16 1 18.56	0.915	18 55 54.9	2.06	3 7.0
5	15 52 46.02	0.838	18 24 46.8	2.21	4 52.5	5	16 1 40.64	0.926	18 57 8.4	2.07	3 3.5
6	15 52 59.11	0.853	18 25 40.4	2.25	4 48.8	6	16 2 2.98	0.938	18 58 22.3	2.00	2 59.9
7	15 53 12.56	0.868	18 26 34.9	2.29	4 45.1	7	16 2 25.58	0.947	18 59 36.6	2.10	2 56.4
8	15 53 26.36	0.883	18 27 30.3	2.33	4 41.4	8	16 2 48.43	0.967	19 0 51.2	2.11	2 52.8
9	15 53 40.51	0.897	18 28 26.6	2.36	4 37.7	9	16 3 11.53	0.987	19 2 6.1	2.13	2 49.3
10	15 53 55.00	0.911	18 29 23.8	2.40	4 34.0	10	16 3 34.87	0.977	19 3 21.4	2.14	2 45.7
11	15 54 9.83	0.925	18 30 21.8	2.44	4 30.3	11	16 3 58.44	0.987	19 4 37.0	2.16	2 42.2
12	15 54 25.00	0.939	18 31 20.7	2.47	4 26.7	12	16 4 22.25	0.997	19 5 53.0	2.17	2 38.6
13	15 54 40.51	0.953	18 32 20.4	2.50	4 23.0	13	16 4 46.29	1.006	19 7 9.3	2.18	2 35.1
14	15 54 56.36	0.967	18 33 20.9	2.54	4 19.3	14	16 5 10.56	1.016	19 8 25.8	2.19	2 31.6
15	15 55 12.54	0.981	18 34 22.2	2.57	4 15.6	15	16 5 35.06	1.026	19 9 42.6	2.20	2 28.0
16	15 55 29.05	0.996	18 35 24.3	2.60	4 12.0	16	16 5 59.78	1.034	19 10 59.6	2.21	2 24.5
17	15 55 45.89	0.769	18 36 27.2	2.63	4 8.3	17	16 6 24.71	1.043	19 12 16.8	2.22	2 21.0
18	15 56 3.06	0.732	18 37 30.8	2.66	4 4.7	18	16 6 49.84	1.051	19 13 34.2	2.23	2 17.5
19	15 56 20.55	0.735	18 38 35.1	2.70	4 1.1	19	16 7 15.18	1.060	19 14 51.8	2.24	2 14.0
20	15 56 38.35	0.748	18 39 40.2	2.73	3 57.4	20	16 7 40.72	1.068	19 16 9.6	2.24	2 10.5
21	15 56 56.46	0.761	18 40 46.0	2.76	3 53.8	21	16 8 6.46	1.076	19 17 27.5	2.25	2 7.0
22	15 57 14.88	0.774	18 41 52.4	2.78	3 50.2	22	16 8 32.39	1.084	19 18 45.5	2.25	2 3.5
23	15 57 33.61	0.787	18 42 59.5	2.81	3 46.5	23	16 8 58.50	1.092	19 20 3.6	2.26	2 0.0
24	15 57 52.64	0.799	18 44 7.2	2.83	3 42.9	24	16 9 24.80	1.100	19 21 21.8	2.26	1 56.5
25	15 58 11.96	0.811	18 45 15.5	2.86	3 39.3	25	16 9 51.28	1.107	19 22 40.0	2.26	1 53.0
26	15 58 31.57	0.823	18 46 24.4	2.88	3 35.7	26	16 10 17.93	1.114	19 23 58.3	2.26	1 49.5
27	15 58 51.47	0.835	18 47 33.9	2.91	3 32.1	27	16 10 44.75	1.121	19 25 16.6	2.26	1 46.0
28	15 59 11.65	0.847	18 48 44.0	2.93	3 28.5	28	16 11 11.73	1.127	19 26 35.0	2.26	1 42.5
29	15 59 32.12	0.859	18 49 54.6	2.95	3 24.9	29	16 11 38.87	1.134	19 27 53.3	2.26	1 39.0
30	15 59 52.87	0.870	18 51 5.7	2.97	3 21.3	30	16 12 6.16	1.140	19 29 11.6	2.26	1 35.6
31	16 0 13.89	0.881	18 52 17.3	2.99	3 17.8	31	16 12 33.61	1.147	19 30 29.9	2.26	1 32.1
32	16 0 35.18	0.893	18 53 29.4	3.01	3 14.2	32	16 13 1.21	1.153	19 31 48.1	2.26	1 28.6
Day of the Month,						Day of the Month,					
		1st.	11th.	21st.	31st.			1st.	11th.	21st.	31st.
Semidiameter		7.7	7.6	7.5	7.4	Semidiameter		7.4	7.3	7.2	7.2
Horizontal Parallax		0.8	0.8	0.8	0.8	Horizontal Parallax		0.8	0.8	0.8	0.8

GREENWICH MEAN TIME.

NOVEMBER.						DECEMBER.					
Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	^h ^m ^s	^s	[°] ['] ["]	["]	^h ^m		^h ^m ^s	^s	[°] ['] ["]	["]	^h ^m
1	16 13 1.21	1-153	19 31 48.1	3-26	1 23.6	1	16 27 35.71	1-246	20 9 14.8	2-89	23 41.7
2	16 13 28.95	1-159	19 33 6.3	3-25	1 25.1	2	16 28 5.62	1-246	20 10 24.0	2-87	23 38.3
3	16 13 56.82	1-164	19 34 24.3	3-25	1 21.7	3	16 28 35.53	1-246	20 11 32.7	2-85	23 34.8
4	16 14 24.83	1-170	19 35 42.2	3-24	1 18.2	4	16 29 5.44	1-246	20 12 40.9	2-83	23 31.4
5	16 14 52.98	1-176	19 37 0.0	3-24	1 14.7	5	16 29 35.34	1-246	20 13 48.6	2-81	23 28.0
6	16 15 21.26	1-181	19 38 17.7	3-24	1 11.3	6	16 30 5.22	1-245	20 14 55.8	2-79	23 24.5
7	16 15 49.66	1-186	19 39 35.3	3-23	1 7.6	7	16 30 35.08	1-244	20 16 2.5	2-77	23 21.1
8	16 16 18.18	1-191	19 40 52.8	3-23	1 4.3	8	16 31 4.91	1-242	20 17 8.6	2-74	23 17.7
9	16 16 46.82	1-196	19 42 10.1	3-21	1 0.9	9	16 31 34.71	1-241	20 18 14.1	2-72	23 14.2
10	16 17 15.57	1-200	19 43 27.1	3-20	0 57.4	10	16 32 4.47	1-239	20 19 19.1	2-70	23 10.8
11	16 17 44.42	1-204	19 44 43.9	3-20	0 54.0	11	16 32 34.20	1-238	20 20 23.6	2-68	23 7.3
12	16 18 13.36	1-208	19 46 0.5	3-19	0 50.5	12	16 33 3.89	1-236	20 21 27.5	2-66	23 3.9
13	16 18 42.40	1-212	19 47 16.9	3-18	0 47.1	13	16 33 33.53	1-234	20 22 30.8	2-62	23 0.5
14	16 19 11.53	1-216	19 48 33.1	3-17	0 43.6	14	16 34 3.11	1-231	20 23 33.5	2-60	22 57.0
15	16 19 40.75	1-219	19 49 49.0	3-16	0 40.2	15	16 34 32.63	1-229	20 24 35.6	2-57	22 53.6
16	16 20 10.05	1-222	19 51 4.6	3-14	0 36.7	16	16 35 2.08	1-226	20 25 37.1	2-55	22 50.1
17	16 20 39.42	1-225	19 52 19.9	3-13	0 33.3	17	16 35 31.46	1-223	20 26 38.0	2-52	22 46.7
18	16 21 8.86	1-228	19 53 34.8	3-11	0 29.8	18	16 36 0.76	1-219	20 27 38.2	2-49	22 43.2
19	16 21 38.37	1-231	19 54 49.4	3-10	0 26.4	19	16 36 29.98	1-216	20 28 37.7	2-47	22 39.8
20	16 22 7.94	1-233	19 56 3.7	3-09	0 23.0	20	16 36 59.11	1-212	20 29 36.6	2-44	22 36.3
21	16 22 37.56	1-235	19 57 17.7	3-07	0 19.5	21	16 37 28.14	1-208	20 30 34.9	2-41	22 32.9
22	16 23 7.23	1-237	19 58 31.3	3-06	0 16.1	22	16 37 57.07	1-203	20 31 32.5	2-39	22 29.4
23	16 23 36.95	1-239	19 59 44.5	3-04	0 12.6	23	16 38 25.89	1-199	20 32 29.4	2-36	22 26.0
24	16 24 6.71	1-241	20 0 57.3	3-03	0 9.2	24	16 38 54.61	1-194	20 33 25.6	2-33	22 22.5
25	16 24 36.50	1-242	20 2 9.7	3-01	0 5.8	25	16 39 23.22	1-189	20 34 21.2	2-30	22 19.1
26	16 25 6.32	1-243	20 3 21.7	2-99	⁵⁰ ₂₈ ²³ _{53.9}	26	16 39 51.71	1-184	20 35 16.1	2-27	22 15.6
27	16 25 36.16	1-244	20 4 33.2	2-97	23 55.5	27	16 40 20.07	1-179	20 36 10.3	2-24	22 12.1
28	16 26 6.02	1-245	20 5 44.3	2-95	23 52.0	28	16 40 48.31	1-174	20 37 3.8	2-21	22 8.7
29	16 26 35.90	1-246	20 6 54.9	2-93	23 48.6	29	16 41 16.42	1-168	20 37 56.6	2-19	22 5.2
30	16 27 5.80	1-246	20 8 5.1	2-91	23 45.2	30	16 41 44.39	1-162	20 38 48.7	2-16	22 1.7
31	16 27 35.71	1-246	20 9 14.8	2-89	23 41.7	31	16 42 12.22	1-156	20 39 40.1	2-13	21 58.3
32	16 28 5.62	1-246	20 10 24.0	2-87	23 38.3	32	16 42 30.90	1-150	20 40 30.9	2-10	21 54.8
Day of the Month,						Day of the Month,					
		1st.	11th.	21st.	31st.			1st.	11th.	21st.	31st.
Semidiameter		⁷ .2	⁷ .1	⁷ .1	⁷ .1	Semidiameter		⁷ .1	⁷ .1	⁷ .2	⁷ .2
Horizontal Parallax		0.8	0.8	0.8	0.8	Horizontal Parallax		0.8	0.8	0.8	0.8

242 SUN'S COÖRDINATES, 1868.

Greenwich Mean Noon.		X.	Y.	Z.	Greenwich Mean Noon.		X.	Y.	Z.	
Jan.	1	d	+1778712	—8871268	—3848865	Mar.	61	+9388080	—2026063	—1269538
	2	2	1950472	8840775	3835641		62	9444772	2775672	1204288
	3	3	2121607	8807534	3821224		63	9498598	2624454	1138678
	4	4	2292066	8771558	3805620		64	9549545	2472455	1072727
	5	5	2461796	8732862	3788834		65	9597604	2319721	1006455
	6	6	+2630747	—8691459	—3770872		66	+9642767	—2166297	—0939884
	7	7	2798871	8647364	3751741		67	9685023	2012228	0873033
	8	8	2966123	8600593	3731447		68	9724364	1857560	0805522
	9	9	3132455	8551160	3709997		69	9760784	1702337	0738570
	10	10	3297815	8499079	3687398		70	9794277	1546603	0670996
	11	11	+3462155	—8444367	—3663657		71	+9824836	—1390399	—0603220
	12	12	3625428	8387039	3638781		72	9852451	1233769	0535260
	13	13	3787587	8327111	3612776		73	9877114	1076756	0467136
	14	14	3948583	8264599	3585650		74	9898818	0919406	0398668
	15	15	4108366	8199520	3557409		75	9917557	0761768	0330476
	16	16	+4266888	—8131891	—3528062		76	+9933324	—0603889	—0261979
	17	17	4424101	8061732	3497618		77	9946112	0445815	0193309
	18	18	4579956	7989062	3466085		78	9955916	0287595	0124756
	19	19	4734402	7913898	3433472		79	9962731	—0128273	—0056071
	20	20	4887386	7836263	3399789		80	9966557	+0029100	+0012635
	21	21	+5038855	—7756180	—3365046		81	+9967393	+0187475	+0081341
	22	22	5188761	7673674	3329254		82	9965237	0345803	0150027
	23	23	5337057	7588772	3292423		83	9960090	0504032	0218671
	24	24	5483694	7501501	3254566		84	9951956	0662110	0287250
	25	25	5628623	7411890	3215696		85	9940843	0819986	0355741
	26	26	+5771796	—7319971	—3175825		86	+9926757	+0977609	+0424123
	27	27	5913165	7225777	3134966		87	9909707	1134029	0492377
	28	28	6052686	7129341	3093133		88	9889703	1291899	0560481
	29	29	6190315	7030637	3050342		89	9866756	1448471	0628414
	30	30	6326013	6929879	3006607		90	9840878	1604599	0666156
	Feb.	31	31	+6459741	—6826923	—2961944	Apr.	91	+9812084	+1760238	+0763686
1		32	6591457	6721864	2916367	92		9780390	1915344	0830085
2		33	6721124	6614739	2869892	93		9745810	2069870	0898033
3		34	6848706	6505583	2822535	94		9708360	2223774	0964811
4		35	6974168	6394431	2774310	95		9668055	2377012	1031302
5		36	+7097474	—6281320	—2725234	96		+9624910	+2529543	+1097485
6		37	7218592	6166287	2675322	97		9578042	2681925	1163342
7		38	7337491	6049367	2624590	98		9530169	2832318	1228858
8		39	7454140	5930596	2573054	99		9478607	2982481	1294014
9		40	7568505	5810008	2520730	100		9424273	3131774	1358791
10		41	+7680554	—5687639	—2467633	101		+9367183	+3280158	+1423172
11		42	7790255	5563524	2413778	102		9307354	3427594	1487141
12		43	7897577	5437698	2359182	103		9244801	3574039	1550678
13		44	8002487	5310196	2303860	104		9179539	3719452	1613765
14		45	8104956	5181056	2247827	105		9111584	3863793	1676385
15		46	+8204950	—5050315	—2191101	106		+9040957	+4007020	+1738519
16		47	8302436	4918011	2133700	107		8967681	4149090	1800148
17		48	8397384	4784184	2075640	108		8891776	4289958	1861255
18		49	8489763	4648878	2016939	109		8813263	4429579	1921822
19		50	8579546	4512135	1957616	110		8732164	4567911	1981831
20		51	+8666700	—4373996	—1897688	111		+8648503	+4704911	+2041264
21		52	8751194	4234506	1837175	112		8562307	4840538	2100104
22		53	8833002	4093712	1776096	113		8473606	4974753	2158332
23		54	8912101	3931659	1714471	114		8382429	5107514	2215929
24		55	8988464	3808393	1652322	115		8288807	5238780	2272878
25		56	+9062069	—3663064	—1589668	116		+8192772	+5368512	+2329163
26		57	9132896	3518422	1526528	117		8094357	5496671	2384768
27		58	9200928	3371812	1462923	118		7993597	5623222	2436677
28		59	9266146	3224183	1398876	119		7890525	5748133	2493875
29		60	9328534	3075583	1334408	120		7785176	5871368	2547346
30		61	+9388080	—2026063	—1269538	121	+7677585	+5092893	+2600077	
31	62	+9444772	—2775672	—1204288	122	+7567788	+6112676	+2652053		

SUN'S COÖRDINATES, 1868. 243

Greenwich Mean Noon.				X.	Y.	Z.	Greenwich Mean Noon.				X.	Y.	Z.
May	1	122 ^d	+7567788	+6112676	+2652053	July	1	183 ^d	-1739725	+9190004	+3987199		
	2	123	7455820	6230685	2703260		2	184	1906086	9162172	3975124		
	3	124	7341717	6346893	2753685		3	185	2071904	9131775	3961934		
	4	125	7225516	6461273	2803316		4	186	2237137	9098820	3947633		
	5	126	7107250	6573797	2852141		5	187	2401744	9063322	3932228		
	6	127	+6986952	+6684437	+2900146		6	188	-2565682	+9025288	+3915722		
	7	128	6364656	6793165	2947319		7	189	2728907	8984725	3898117		
	8	129	6740397	6899952	2993649		8	190	2891376	8941642	3879418		
	9	130	6614209	7004772	3039125		9	191	3053042	8896048	3859630		
	10	131	6486125	7107595	3083733		10	192	3213861	8847953	3838757		
11	132	+6356179	+7208394	+3127461	11	193	-3373789	+8797368	+3816805				
12	133	6224407	7307143	3170298	12	194	3532783	8744303	3793778				
13	134	6090846	7403814	3212232	13	195	3690798	8688770	3769682				
14	135	5955532	7498376	3253251	14	196	3847788	8630780	3744522				
15	136	5818501	7590800	3293343	15	197	4003704	8570347	3718303				
16	137	+5679793	+7681058	+3332495	16	198	-4158498	+8507485	+3691031				
17	138	5539446	7769124	3370697	17	199	4312124	8442210	3662714				
18	139	5397499	7854972	3407937	18	200	4464534	8374538	3633359				
19	140	5253993	7938575	3444205	19	201	4615682	8304488	3602974				
20	141	5108974	8019905	3479488	20	202	4765521	8232082	3571567				
21	142	+4962488	+8098936	+3513775	21	203	-4914007	+8157340	+3539148				
22	143	4814582	8175646	3547055	22	204	5061094	8080285	3505726				
23	144	4665303	8250012	3579319	23	205	5206738	8000941	3471310				
24	145	4514695	8322014	3610561	24	206	5350589	7919334	3435910				
25	146	4362802	8391633	3640771	25	207	5493531	7835489	3399539				
26	147	+4209671	+8458852	+3669940	26	208	-5634594	+7749433	+3362208				
27	148	4055350	8523655	3698062	27	209	5774050	7661193	3323929				
28	149	3899890	8596027	3725129	28	210	5911862	7570798	3284712				
29	150	3743337	8645954	3751135	29	211	6047992	7478276	3244570				
30	151	3585737	8703423	3776074	30	212	6182403	7383651	3203514				
31	152	+3427137	+8758423	+3799941	31	213	-6315059	+7286950	+3161556				
June	1	153	3267580	8810941	3822731	Aug.	1	214	6445927	7188200	3118709		
	2	154	3107112	8860967	3844439		2	215	6574974	7087427	3074983		
	3	155	2945778	8908492	3865060		3	216	6702166	6984659	3030391		
	4	156	2783622	8953506	3884591		4	217	6827467	6879923	2984945		
	5	157	+2620685	+8996000	+3903026		5	218	-6950844	+6773246	+2938656		
	6	158	2457011	9035064	3920361		6	219	7072263	6664652	2891535		
	7	159	2292643	9073389	3936594		7	220	7191688	6554170	2843596		
	8	160	2127623	9108263	3951720		8	221	7309086	6441826	2794850		
	9	161	1961994	9140576	3965734		9	222	7424423	6327647	2745309		
	10	162	+1795799	+9170320	+3978631		10	223	-7537662	+6211662	+2694985		
11	163	1629085	9197484	3990409	11	224	7648769	6093898	2643891				
12	164	1461898	9222057	4001063	12	225	7757711	5974385	2592041				
13	165	1294283	9244029	4010589	13	226	7864450	5853156	2539448				
14	166	1126286	9263391	4018983	14	227	7968948	5730245	2486126				
15	167	+0957957	+9280134	+4026242	15	228	-8071173	+5605685	+2432089				
16	168	0789343	9294254	4032364	16	229	8171091	5479511	2377353				
17	169	0620494	9305743	4037346	17	230	8268667	5351761	2321935				
18	170	0451462	9314596	4041187	18	231	8363868	5222472	2265850				
19	171	0282298	9320808	4043886	19	232	8456665	5091684	2209115				
20	172	+0113052	+9324375	+4045439	20	233	-8547030	+4959435	+2151744				
21	173	-0056229	9325300	4045845	21	234	8634936	4825766	2093755				
22	174	0225492	9323584	4045106	22	235	8720354	4690717	2035166				
23	175	0394684	9319229	4043223	23	236	8803260	4554329	1975995				
24	176	0563754	9312238	4040197	24	237	8883629	4416643	1916260				
25	177	-0732653	+9302614	+4036029	25	238	-8961437	+4277700	+1855979				
26	178	0901331	9290364	4030721	26	239	9036662	4137541	1795169				
27	179	1069739	9275496	4024277	27	240	9109286	3996208	1733848				
28	180	1237828	9258017	4016699	28	241	9179291	3853740	1672033				
29	181	1405552	9237935	4007991	29	242	9246660	3710180	1609743				
30	182	-1572866	+9215261	+3998156	30	243	-9311373	+3565567	+1546995				
31	183	-1739725	+9190004	+3987199	31	244	-9373414	+3419940	+1483807				

244 SUN'S COÖRDINATES, 1868.

Greenwich Mean Noon.		X.	Y.	Z.	Greenwich Mean Noon.		X.	Y.	Z.
Sept. 1	245	-.9432767	+.3273338	+.1420195	Nov. 1	306	-.7665574	-.5771960	-.2504265
	2	.246	.9489413	.3125800		2	307	.7552491	.5892559
	3	.247	.9543335	.2977363		3	308	.7437121	.6011384
	4	.248	.9594516	.2828067		4	309	.7319492	.6128397
	5	.249	.9642938	.2677951		5	310	.7199634	.6243563
	6	.250	-.9688584	+.2527054		6	311	-.7077577	-.6356845
	7	.251	.9731436	.2375416		7	312	.6953355	.6468205
	8	.252	.9771477	.2223076		8	313	.6827004	.6577604
	9	.253	.9808691	.2070076		9	314	.6698559	.6685005
	10	.254	.9843063	.1916460		10	315	.6568055	.6790370
	11	.255	-.9874578	+.1762272		11	316	-.6435530	-.6893662
	12	.256	.9903220	.1607557		12	317	.6301024	.6994845
	13	.257	.9928974	.1452360		13	318	.6164575	.7093882
	14	.258	.9951825	.1296729		14	319	.6026224	.7190738
	15	.259	.9971762	.1140711		15	320	.5886014	.7285380
Oct. 1	260	-.9988776	+.0984354	+.0427105	Dec. 1	321	-.5743991	-.7377779	-.3300912
	17	.261	1.0002859	.0827708		17	322	.5600205	.7467903
	18	.262	1.0014006	.0670823		18	323	.5454703	.7555721
	19	.263	1.0022213	.0513747		19	324	.5307531	.7641206
	20	.264	1.0027472	.0356528		20	325	.5158735	.7724330
	21	.265	-.1002979	+.0199214		21	326	-.5008362	-.7805068
	22	.266	1.0029136	+.0041853		22	327	.4856461	.7883335
	23	.267	1.0025545	-.0115506		23	328	.4703079	.7959288
	24	.268	1.0019009	.0272817		24	329	.4548265	.8032725
	25	.269	1.0009531	.0430032		25	330	.4392066	.8103687
	26	.270	-.9997115	-.0587106		26	331	-.4234529	-.8172156
	27	.271	.9981764	.0743995		27	332	.4075701	.8238112
	28	.272	.9963484	.0900652		28	333	.3915627	.8301537
	29	.273	.9942279	.1057033		29	334	.3754354	.8362413
	30	.274	.9918155	.1213097		30	335	.3591928	.8420721
Oct. 1	275	-.9891119	-.1368804	-.0693887	Dec. 1	336	-.3428396	-.8476442	-.3677621
	2	.276	.9861175	.1524110		2	337	.3263805	.8529556
	3	.277	.9828327	.1678970		3	338	.3098200	.8580046
	4	.278	.9792583	.1833342		4	339	.2931628	.8627894
	5	.279	.9753949	.1987182		5	340	.2764137	.8673083
	6	.280	-.9712431	-.2140444		6	341	-.2595778	-.8715595
	7	.281	.9668033	.2293086		7	342	.2426601	.8755413
	8	.282	.9620763	.2445062		8	343	.2256656	.8792522
	9	.283	.9570628	.2596324		9	344	.2085996	.8826904
	10	.284	.9517637	.2746826		10	345	.1914674	.8858543
	11	.285	-.9461802	-.2896523		11	346	-.1742743	-.8887426
	12	.286	.9403133	.3045367		12	347	.1570261	.8913541
	13	.287	.9341642	.3193310		13	348	.1397282	.8936875
	14	.288	.9277346	.3340304		14	349	.1223862	.8957419
	15	.289	.9210262	.3486301		15	350	.1050058	.8975165
Oct. 1	290	-.9140407	-.3631252	-.1575434	Dec. 1	351	-.0875928	-.8990109	-.3900446
	17	.291	.9067799	.3775109		17	352	.0701530	.9002246
	18	.292	.8992460	.3917824		18	353	.0526924	.9011574
	19	.293	.8914413	.4059351		19	354	.0352168	.9018080
	20	.294	.8833683	.4199644		20	355	.0177320	.9021793
	21	.295	-.8750294	-.4338660		21	356	-.0002434	-.9022685
	22	.296	.8664273	.4476356		22	357	+.0172439	.9020769
	23	.297	.8575649	.4612690		23	358	.0347244	.9016051
	24	.298	.8484451	.4747621		24	359	.0521925	.9008534
	25	.299	.8390707	.4881109		25	360	.0696429	.8998222
	26	.300	-.8294443	-.5013117		26	361	+.0870707	-.8985121
	27	.301	.8195688	.5143606		27	362	.1044707	.8969226
	28	.302	.8094470	.5272538		28	363	.1218378	.8950574
	29	.303	.7990870	.5399876		29	364	.1391669	.8929141
	30	.304	.7884768	.5525583		30	365	.1564529	.8904942
Oct. 1	305	-.7776343	-.5649623	-.2451188	Dec. 1	366	+.1736909	-.8877985	-.3851826
	306	-.7665574	-.5771960	-.2504265		367	+.1908757	-.8848278	-.3838929

MOON'S LONGITUDE, &c., 1868. 245

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Day of Month.	JANUARY.		FEBRUARY.		MARCH.	
	True Longitude.	Latitude.	True Longitude.	Latitude.	True Longitude.	Latitude.
1.0	351° 16' 41.4"	-1° 18' 37.1"	38° 45' 27.9"	-4° 42' 46.1"	62° 18' 37.2"	-5° 17' 16.5"
1.5	357 25 49.6	1 50 6.8	45 26 24.7	4 57 8.5	69 9 40.6	5 16 46.3
2.0	3 39 27.3	2 20 41.7	52 13 34.1	5 7 36.9	76 5 18.1	5 11 41.1
2.5	9 58 12.2	2 49 59.3	59 7 8.5	5 13 51.1	83 5 28.6	5 1 56.3
3.0	16 22 40.6	3 17 35.8	66 7 12.9	5 15 33.5	90 10 6.5	4 47 31.6
3.5	22 53 26.4	3 43 6.1	73 13 44.1	5 12 29.5	97 19 0.7	4 28 32.0
4.0	29 30 59.4	4 6 4.0	80 26 28.5	5 4 29.0	104 31 53.7	4 5 8.0
4.5	36 15 43.6	4 26 2.6	87 45 2.3	4 51 27.4	111 48 21.5	3 37 36.2
5.0	43 7 55.4	4 42 34.6	95 8 50.4	4 33 27.0	119 7 53.1	3 6 19.6
5.5	50 7 42.0	4 55 13.4	102 37 6.3	4 10 37.6	126 29 50.8	2 31 47.6
6.0	57 14 59.3	5 3 33.7	110 8 53.8	3 43 17.5	133 53 30.9	1 54 35.5
6.5	64 29 30.3	5 7 13.4	117 43 8.5	3 11 53.3	141 18 4.5	1 15 23.4
7.0	71 50 44.5	5 5 54.6	125 18 40.0	2 36 59.4	148 42 38.9	-0 34 55.5
7.5	79 17 57.4	4 59 25.7	132 54 14.4	1 59 17.2	156 6 19.3	+0 6 2.0
8.0	86 50 11.5	4 47 42.2	140 28 37.7	1 19 32.9	163 28 10.4	0 46 42.4
8.5	94 26 17.7	4 30 48.5	148 0 38.3	-0 38 35.9	170 47 18.2	1 26 20.4
9.0	102 4 58.1	4 8 58.2	155 29 10.1	+0 2 43.6	178 2 52.4	2 4 13.6
9.5	109 44 49.4	3 42 34.6	162 53 14.0	0 43 36.9	185 14 7.3	2 39 44.1
10.0	117 24 26.5	3 12 9.1	170 12 0.3	1 23 18.8	192 20 23.7	3 12 19.5
10.5	125 2 26.0	2 38 20.8	177 24 49.7	2 1 8.7	199 21 10.0	3 41 33.6
11.0	132 37 30.4	2 1 53.8	184 31 13.4	2 36 32.0	206 16 2.8	4 7 6.5
11.5	140 8 30.7	1 23 35.5	191 30 53.3	3 9 0.2	213 4 47.1	4 28 44.3
12.0	147 34 28.7	0 44 13.9	198 23 41.6	3 38 11.3	219 47 16.6	4 46 18.9
12.5	154 54 38.4	-0 4 36.0	205 9 39.6	4 3 49.1	226 23 32.7	4 59 47.0
13.0	162 8 26.4	+0 34 34.6	211 48 57.0	4 25 42.5	232 53 44.6	5 9 9.5
13.5	169 15 31.8	1 12 38.3	218 21 50.0	4 43 45.4	239 18 7.9	5 14 30.6
14.0	176 15 45.2	1 49 0.7	224 48 41.0	4 57 55.0	245 37 3.8	5 15 57.0
14.5	183 9 7.6	2 23 12.5	231 9 55.9	5 8 11.8	251 50 58.4	5 13 37.5
15.0	189 55 48.3	2 54 49.7	237 26 4.2	5 14 38.6	258 0 21.5	5 7 42.0
15.5	196 36 3.7	3 23 33.3	243 37 37.4	5 17 20.1	264 5 45.6	4 58 21.5
16.0	203 10 15.6	3 49 8.5	249 45 8.4	5 16 22.3	270 7 45.6	4 45 47.4
16.5	209 38 49.3	4 11 24.3	255 49 10.3	5 11 52.5	276 6 57.5	4 30 11.8
17.0	216 2 12.7	4 30 13.1	261 50 16.3	5 3 58.3	282 3 58.3	4 11 46.8
17.5	222 20 54.6	4 45 29.8	267 48 59.0	4 52 48.8	287 59 24.7	3 50 44.9
18.0	228 35 24.5	4 57 11.8	273 45 49.6	4 38 33.3	293 53 53.2	3 27 19.0
18.5	234 46 11.4	5 5 18.3	279 41 18.3	4 21 22.1	299 47 59.5	3 1 42.3
19.0	240 53 43.0	5 9 50.2	285 35 53.6	4 1 26.0	305 42 17.8	2 34 9.0
19.5	246 58 26.0	5 10 49.8	291 30 1.9	3 38 57.0	311 37 20.4	2 4 53.8
20.0	253 0 45.5	5 8 21.0	297 24 8.0	3 14 7.8	317 33 37.9	1 34 12.2
20.5	259 1 4.3	5 2 28.7	303 18 34.8	2 47 19.2	323 31 38.4	1 2 21.3
21.0	264 59 43.4	4 53 19.2	309 13 42.9	2 18 25.1	329 31 47.1	+0 29 39.0
21.5	270 57 2.4	4 41 0.1	315 9 51.6	1 48 3.1	335 34 26.7	-0 3 35.3
22.0	276 53 18.7	4 25 40.2	321 7 18.1	1 16 23.4	341 39 56.9	0 37 1.0
22.5	282 48 48.4	4 7 29.7	327 6 18.2	0 43 44.8	347 48 33.8	1 10 16.0
23.0	288 43 46.6	3 46 39.9	333 7 6.3	+0 10 27.0	354 0 30.4	1 42 57.0
23.5	294 38 27.1	3 23 23.5	339 9 55.6	-0 23 9.0	0 15 56.5	2 14 40.2
24.0	300 33 3.4	2 57 54.5	345 14 58.5	0 56 41.6	6 34 58.5	2 45 0.6
24.5	306 27 48.9	2 30 28.1	351 22 26.6	1 29 48.0	12 57 39.7	3 13 33.1
25.0	312 22 56.9	2 1 20.4	357 32 31.5	2 2 5.5	19 24 0.5	3 39 53.0
25.5	318 18 41.5	1 30 48.7	3 45 24.3	2 33 10.6	25 53 58.8	4 3 35.9
26.0	324 15 17.5	0 59 11.1	10 1 16.4	3 2 39.9	32 27 30.2	4 24 18.8
26.5	330 13 1.1	+0 26 46.6	16 20 19.2	3 30 10.4	39 4 28.6	4 41 40.4
27.0	336 12 10.0	-0 6 5.4	22 42 44.2	3 55 19.1	45 44 46.4	4 55 21.2
27.5	342 13 3.3	0 39 4.7	29 8 43.1	4 17 43.9	52 28 15.5	5 5 4.7
28.0	348 16 2.3	1 11 50.8	35 38 27.7	4 37 3.7	59 14 47.0	5 10 37.5
28.5	354 21 29.7	1 44 2.6	42 12 9.3	4 52 58.4	66 4 11.9	5 11 49.5
29.0	0 29 50.3	2 15 18.7	48 49 58.6	5 5 9.6	72 56 21.3	5 8 34.5
29.5	6 41 30.1	2 45 17.3	55 32 5.2	5 13 20.4	79 51 6.4	5 0 50.0
30.0	12 56 56.0	3 13 36.4	62 18 37.2	5 17 16.5	86 48 18.9	4 48 38.3
30.5	19 16 35.7	3 39 53.6	69 9 40.6	5 16 46.3	93 47 50.3	4 32 5.6
31.0	25 40 56.8	4 3 46.2	76 5 18.1	5 11 41.1	100 49 31.9	4 11 22.6
31.5	32 10 25.9	-4 24 51.2	83 5 28.6	-5 1 56.3	107 53 14.5	-3 46 44.9

246 MOON'S LONGITUDE, &c., 1868.

FOR GREENWICH MEAN NOON AND MIDNIGHT.						
Day of Month.	APRIL.		MAY.		JUNE.	
	True Longitude.	Latitude.	True Longitude.	Latitude.	True Longitude.	Latitude.
1.0	114° 58' 47.6	-3° 18' 32.1	154° 8' 18.1	+0° 8' 22.9	205° 46' 50.6	+4° 11' 1.5
1.5	122 5 59.2	2 47 8.6	161 8 30.0	0 45 30.5	212 25 2.0	4 28 40.6
2.0	129 14 35.1	2 13 2.8	168 7 29.1	1 21 48.6	219 0 23.2	4 42 35.8
2.5	136 24 18.2	1 36 46.9	175 5 5.3	1 56 43.9	225 32 50.4	4 52 40.8
3.0	143 34 48.4	0 58 56.4	182 1 6.5	2 29 44.7	232 2 19.0	4 58 52.8
3.5	150 45 41.9	-0 20 9.3	188 55 18.3	3 0 22.1	238 28 44.0	5 1 12.5
4.0	157 56 31.7	+0 18 54.7	195 47 24.0	3 28 10.2	244 52 1.0	4 59 43.5
4.5	165 6 47.2	0 57 35.4	202 37 5.2	3 52 46.6	251 12 6.3	4 54 32.1
5.0	172 15 55.3	1 35 12.9	209 24 2.8	4 13 53.1	257 28 58.1	4 45 47.7
5.5	179 23 20.8	2 11 9.3	216 7 56.8	4 31 15.6	263 42 36.7	4 33 41.5
6.0	186 28 27.4	2 44 49.4	222 48 28.5	4 44 44.5	269 53 5.3	4 18 26.8
6.5	193 30 39.2	3 15 42.1	229 25 20.6	4 54 14.6	276 0 30.2	4 0 18.4
7.0	200 29 22.0	3 43 20.9	235 58 19.3	4 59 44.8	282 5 1.2	3 39 32.1
7.5	207 24 4.5	4 7 24.5	242 27 13.1	5 1 18.1	288 6 51.6	3 16 24.7
8.0	214 14 19.0	4 27 37.1	248 51 55.7	4 59 0.6	294 6 18.4	2 51 13.1
8.5	220 59 43.7	4 43 48.5	255 12 25.5	4 53 1.3	300 3 42.2	2 24 15.0
9.0	227 40 2.8	4 55 53.5	261 28 45.9	4 43 31.9	305 59 27.2	1 55 47.6
9.5	234 15 6.7	5 3 51.6	267 41 5.2	4 30 45.3	311 54 0.5	1 26 8.6
10.0	240 44 52.8	5 7 46.4	273 49 37.1	4 14 56.3	317 47 52.7	0 55 35.1
10.5	247 9 25.2	5 7 44.5	279 54 40.1	3 56 20.2	323 41 36.9	+0 24 24.6
11.0	253 28 54.4	5 3 55.6	285 56 37.1	3 35 12.8	329 35 48.7	-0 7 5.8
11.5	259 43 36.4	4 56 30.8	291 55 55.0	3 11 50.3	335 31 5.8	0 38 38.8
12.0	265 53 53.0	4 45 42.9	297 53 4.3	2 46 28.7	341 28 7.2	1 9 56.6
12.5	272 0 10.3	4 31 45.4	303 48 39.0	2 19 24.2	347 27 33.0	1 40 41.4
13.0	278 2 58.5	4 14 52.6	309 43 15.5	1 50 52.8	353 30 3.7	2 10 34.6
13.5	284 2 50.9	3 55 18.6	315 37 32.3	1 21 10.5	359 36 19.3	2 39 16.6
14.0	290 0 23.6	3 33 17.9	321 32 9.4	0 50 33.4	365 38 58.5	3 6 27.5
14.5	295 56 14.4	3 9 5.0	327 27 47.8	+0 19 18.0	12 2 38.2	3 31 45.8
15.0	301 51 2.6	2 42 54.5	333 25 8.7	-0 12 18.8	18 23 51.7	3 54 49.5
15.5	307 45 27.7	2 15 1.1	339 24 53.2	0 43 59.6	24 51 8.2	4 15 15.8
16.0	313 40 9.8	1 45 39.9	345 27 41.2	1 15 25.7	31 24 51.1	4 32 41.4
16.5	319 35 48.1	1 15 6.3	351 34 10.8	1 46 17.8	38 5 16.8	4 46 42.9
17.0	325 33 0.6	0 43 36.8	357 44 57.5	2 16 15.0	44 52 33.4	4 56 57.9
17.5	331 32 23.8	+0 11 28.4	4 0 33.3	2 44 55.4	51 46 39.4	5 3 5.5
18.0	337 34 32.1	-0 21 0.6	10 21 25.8	3 11 55.9	58 47 22.9	5 4 47.7
18.5	343 39 56.6	0 53 30.5	16 47 56.8	3 36 52.2	65 54 20.9	5 1 50.3
19.0	349 49 5.5	1 25 40.4	23 20 21.6	3 59 19.2	73 6 59.6	4 54 4.3
19.5	356 2 22.5	1 57 8.2	29 58 48.1	4 18 52.0	80 24 34.9	4 41 27.1
20.0	2 20 6.8	2 27 30.1	36 43 15.6	4 35 5.8	87 46 14.0	4 24 3.3
20.5	8 42 32.3	2 56 21.7	43 33 34.7	4 47 37.2	95 10 57.3	4 2 5.3
21.0	15 9 47.1	3 23 17.2	50 29 26.9	4 56 5.5	102 37 40.7	3 35 53.2
21.5	21 41 53.5	3 47 51.2	57 30 24.8	5 0 12.9	110 5 18.7	3 5 54.6
22.0	28 18 47.4	4 9 38.1	64 35 53.0	4 59 46.5	117 32 47.1	2 32 43.4
22.5	35 0 18.7	4 28 13.4	71 45 9.3	4 54 38.7	124 59 5.3	1 56 58.3
23.0	41 46 11.4	4 43 14.8	78 57 26.7	4 44 48.1	132 23 18.7	1 19 21.7
23.5	48 36 4.5	4 54 22.1	86 11 55.0	4 30 19.9	139 44 40.5	0 40 37.2
24.0	55 29 32.8	5 1 19.0	93 27 43.7	4 11 25.9	147 2 31.9	-0 1 28.6
24.5	62 26 8.1	5 3 53.0	100 44 3.2	3 48 24.5	154 16 23.4	+0 37 22.1
25.0	69 25 20.3	5 1 56.4	108 0 7.3	3 21 39.8	161 25 54.0	1 15 15.5
25.5	76 26 38.7	4 55 26.6	115 15 15.0	2 51 40.8	168 30 50.3	1 51 35.8
26.0	83 29 33.5	4 44 26.4	122 28 51.3	2 19 0.0	175 31 6.1	2 25 51.2
26.5	90 33 36.3	4 29 3.6	129 40 27.3	1 44 13.1	182 26 41.3	2 57 34.4
27.0	97 38 21.8	4 9 31.3	136 49 41.2	1 7 56.9	189 17 39.7	3 26 22.3
27.5	104 43 27.5	3 46 7.4	143 56 17.2	-0 30 48.7	196 4 9.0	3 51 56.3
28.0	111 48 34.4	3 19 13.8	151 0 5.2	+0 6 34.3	202 46 19.2	4 14 1.3
28.5	118 53 27.1	2 49 16.3	158 0 59.5	0 43 36.6	209 24 21.5	4 32 26.5
29.0	125 57 53.1	2 16 43.9	164 58 58.4	1 19 44.1	215 58 27.6	4 47 4.1
29.5	133 1 42.5	1 42 7.8	171 54 2.3	1 54 25.2	222 28 49.4	4 57 49.5
30.0	140 4 47.7	1 6 1.5	178 46 13.1	2 27 10.7	228 55 38.5	5 4 41.4
30.5	147 7 1.8	-0 28 59.5	185 35 33.5	2 57 34.6	235 19 5.5	5 7 40.8
31.0	154 8 18.1	+0 8 22.9	192 22 5.9	3 25 13.7	241 39 20.5	5 6 51.1
31.5	161 8 30.0	+0 45 30.5	199 5 51.5	+3 49 48.2	247 56 32.8	+5 2 18.7

MOON'S LONGITUDE, &c., 1868. 247

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Day of Month.	JULY.		AUGUST.		SEPTEMBER.	
	True Longitude.	Latitude.	True Longitude.	Latitude.	True Longitude.	Latitude.
1.0	241° 39' 20.5	+5° 6' 51.2	287° 41' 51.7	+3° 16' 9.3	332° 1' 29.7	-0° 33' 12.1
1.5	247 56 32.7	5 2 18.7	293 39 11.0	2 49 21.7	337 57 27.1	1 5 40.2
2.0	254 10 50.7	4 54 11.4	299 35 15.3	2 20 48.5	343 54 40.8	1 37 31.0
2.5	260 22 22.4	4 42 30.3	305 30 20.9	1 50 47.6	349 53 25.8	2 8 24.6
3.0	266 31 15.7	4 27 54.2	311 24 44.0	1 19 37.6	355 53 56.9	2 38 0.7
3.5	272 37 39.0	4 10 9.5	317 18 41.0	0 47 37.5	1 56 28.3	3 5 59.4
4.0	278 41 41.1	3 49 39.9	323 12 28.7	+0 15 6.5	8 1 14.1	3 32 1.2
4.5	284 43 31.6	3 26 41.4	329 6 24.6	-0 17 36.0	14 8 28.4	3 55 47.1
5.0	290 43 21.4	3 1 30.9	335 0 47.3	0 50 10.5	20 18 25.6	4 16 58.7
5.5	296 41 23.3	2 34 25.9	340 55 56.2	1 22 17.4	26 31 20.4	4 35 18.7
6.0	302 37 52.2	2 5 44.6	346 52 12.1	1 53 37.4	32 47 28.1	4 50 30.7
6.5	308 33 4.6	1 35 45.2	352 49 57.0	2 23 51.4	39 7 4.4	5 2 19.4
7.0	314 27 19.6	1 4 46.3	358 49 34.3	2 52 40.3	45 30 25.2	5 10 30.9
7.5	320 20 58.3	0 33 6.5	4 51 29.1	3 19 45.2	51 57 46.8	5 14 53.0
8.0	326 14 24.3	+0 1 4.3	10 56 7.5	3 44 47.6	58 29 24.9	5 15 15.1
8.5	332 8 4.0	-0 31 1.8	17 3 56.6	4 7 29.0	65 5 34.9	5 11 28.8
9.0	338 2 26.0	1 2 53.5	23 15 24.3	4 27 31.2	71 46 31.0	5 3 28.3
9.5	343 58 0.7	1 34 12.4	29 30 58.7	4 44 36.5	78 32 25.3	4 51 10.5
10.0	349 55 21.5	2 4 40.2	35 51 7.7	4 58 27.4	85 23 27.3	4 34 36.0
10.5	355 54 59.8	2 33 58.6	42 16 18.3	5 8 46.8	92 19 42.7	4 13 49.4
11.0	1 57 34.3	3 1 48.8	48 46 55.5	5 15 18.6	99 21 12.7	3 48 59.7
11.5	8 3 40.0	3 27 51.7	55 23 22.0	5 17 48.0	106 27 52.8	3 20 21.0
12.0	14 13 52.8	3 51 48.0	62 5 56.7	5 16 1.8	113 39 31.4	2 48 13.5
12.5	20 28 48.4	4 13 17.8	68 54 53.7	5 9 49.2	120 55 49.4	2 13 3.2
13.0	26 49 0.9	4 32 0.8	75 50 20.9	4 59 2.7	128 16 19.6	1 35 22.0
13.5	33 15 1.4	4 47 36.6	82 52 18.5	4 43 38.8	135 40 26.3	0 55 47.5
14.0	39 47 17.7	4 59 44.8	90 0 38.4	4 23 39.2	143 7 25.6	-0 15 2.0
14.5	46 26 12.4	5 8 5.4	97 15 2.8	3 59 11.6	150 36 26.2	+0 26 8.4
15.0	53 12 1.8	5 12 19.8	104 35 3.9	3 30 30.9	158 6 30.1	1 6 55.6
15.5	60 4 54.1	5 12 11.2	112 0 3.2	2 57 59.2	165 36 34.9	1 46 31.1
16.0	67 4 48.6	5 7 26.0	119 20 13.0	2 22 6.3	173 5 35.8	2 24 8.7
16.5	74 11 34.1	4 57 54.3	127 1 36.5	1 43 29.2	180 32 28.0	2 59 5.6
17.0	81 24 48.1	4 43 32.1	134 36 9.9	1 2 51.3	187 56 9.0	3 30 44.9
17.5	88 43 56.7	4 24 21.6	142 11 44.3	-0 21 1.1	195 15 40.7	3 58 35.8
18.0	96 8 15.2	4 0 32.8	149 47 8.3	+0 21 10.7	202 30 12.5	4 22 15.5
18.5	103 36 48.9	3 32 23.6	157 21 10.8	1 2 52.8	209 39 2.5	4 41 28.7
19.0	111 8 34.7	3 0 20.2	164 52 43.4	1 43 15.0	216 41 38.1	4 56 7.1
19.5	118 42 24.0	2 24 56.6	172 20 42.4	2 21 31.0	223 37 37.8	5 6 9.2
20.0	126 17 4.8	1 46 53.7	179 44 11.6	2 57 0.7	230 26 50.2	5 11 38.9
20.5	133 51 25.1	1 6 57.2	187 2 24.0	3 29 10.1	237 9 13.7	5 12 45.2
21.0	141 24 15.2	-0 25 55.9	194 14 42.2	3 57 32.6	243 44 55.8	5 9 40.2
21.5	148 54 31.1	+0 15 20.4	201 20 39.4	4 21 49.3	250 14 12.1	5 2 38.5
22.0	156 21 15.4	0 56 3.4	208 19 59.2	4 41 47.5	256 37 24.7	4 51 56.2
22.5	163 43 39.7	1 35 27.4	215 12 35.1	4 57 21.4	262 55 0.5	4 37 50.4
23.0	171 1 5.0	2 12 51.9	221 58 29.5	5 8 30.4	269 7 30.8	4 20 38.9
23.5	178 13 2.3	2 47 41.5	228 37 52.3	5 15 17.9	275 15 29.8	4 0 39.4
24.0	185 19 12.5	3 19 27.2	235 10 59.9	5 17 51.1	281 19 33.7	3 38 9.6
24.5	192 19 25.2	3 47 45.9	241 38 13.6	5 16 19.7	287 20 19.9	3 13 26.8
25.0	199 13 38.1	4 12 20.3	247 59 58.6	5 10 55.3	293 18 26.4	2 46 48.2
25.5	206 1 56.0	4 32 58.8	254 16 42.8	5 1 50.8	299 14 30.4	2 18 31.0
26.0	212 44 29.0	4 49 34.0	260 28 55.8	4 49 20.2	305 9 8.7	1 48 52.0
26.5	219 21 31.6	5 2 2.9	266 37 8.4	4 33 38.0	311 2 56.8	1 18 8.4
27.0	225 53 21.4	5 10 25.9	272 41 51.7	4 14 59.5	316 56 28.7	0 46 37.6
27.5	232 20 18.3	5 14 46.3	278 43 36.7	3 53 40.0	322 50 15.6	+0 14 37.2
28.0	238 42 43.5	5 15 9.5	284 42 53.5	3 29 55.3	328 44 46.6	-0 17 34.7
28.5	245 0 59.0	5 11 43.2	290 40 11.5	3 4 1.7	334 40 28.5	0 49 39.3
29.0	251 15 26.5	5 4 36.6	296 35 58.4	2 36 15.7	340 37 45.1	1 21 17.4
29.5	257 26 27.6	4 54 0.4	302 30 40.4	2 6 54.3	346 36 57.7	1 52 9.2
30.0	263 34 23.7	4 40 6.5	308 24 42.6	1 36 15.0	352 38 24.3	2 21 54.6
30.5	269 39 35.1	4 23 7.9	314 18 27.9	1 4 35.9	358 42 20.0	2 50 13.4
31.0	275 42 21.3	4 3 18.7	320 12 17.8	+0 32 15.6	4 48 57.0	3 16 45.4
31.5	281 43 0.9	+3 40 53.8	326 6 32.3	-0 0 26.9	10 58 24.8	-3 41 10.5

248 MOON'S LONGITUDE, &c., 1868.

FOR GREENWICH MEAN NOON AND MIDNIGHT.						
Day of Month.	OCTOBER.		NOVEMBER.		DECEMBER.	
	True Longitude.	Latitude.	True Longitude.	Latitude.	True Longitude.	Latitude.
1.0	4 48 57.0	-3 16 45.4	51 58 35.8	-5 0 54.9	88 30 55.2	-3 54 42.7
1.5	10 58 24.8	3 41 10.5	58 38 18.6	4 59 16.2	95 35 1.3	3 29 23.2
2.0	17 10 50.7	4 3 8.9	65 21 10.3	4 53 29.0	102 40 48.4	3 0 41.1
2.5	23 26 19.4	4 22 21.6	72 6 52.7	4 43 32.6	109 47 41.6	2 29 3.1
3.0	29 44 54.0	4 38 30.9	78 55 7.8	4 29 30.9	116 55 8.8	1 55 0.0
3.5	36 6 35.9	4 51 20.7	85 45 38.5	4 11 31.9	124 2 41.8	1 19 5.6
4.0	42 31 26.1	5 0 36.9	92 38 9.2	3 49 48.0	131 9 56.6	0 41 56.1
4.5	48 59 24.7	5 6 7.6	99 32 26.5	3 24 35.6	138 16 33.8	-0 4 8.3
5.0	55 30 31.2	5 7 43.4	106 28 19.3	2 56 14.9	145 22 18.1	+0 33 40.5
5.5	62 4 45.8	5 5 17.4	113 25 39.0	2 25 9.7	152 26 57.9	1 10 53.3
6.0	68 42 9.7	4 58 46.0	120 24 19.2	1 51 46.9	159 30 24.9	1 46 55.1
6.5	75 22 44.6	4 48 8.5	127 24 15.3	1 16 35.9	166 32 32.8	2 21 12.5
7.0	82 6 32.5	4 33 27.6	134 25 23.7	0 40 8.5	173 33 16.6	2 53 14.6
7.5	88 53 36.6	4 14 49.7	141 27 41.2	-0 2 58.3	180 32 31.8	3 22 33.4
8.0	95 43 59.7	3 52 24.8	148 31 3.3	+0 34 20.1	187 30 13.6	3 48 43.9
8.5	102 37 44.6	3 26 26.4	155 35 23.6	1 11 10.8	194 26 16.0	4 11 24.8
9.0	109 34 53.1	2 57 12.4	162 40 33.6	1 46 58.3	201 20 31.1	4 30 18.4
9.5	116 35 25.3	2 25 4.6	169 46 21.8	2 21 7.4	208 12 49.4	4 45 11.1
10.0	123 39 18.9	1 50 28.9	176 52 32.1	2 53 4.6	215 9 59.5	4 55 53.6
10.5	130 46 27.5	1 13 55.1	183 58 43.2	3 22 18.5	221 50 48.2	5 2 20.6
11.0	137 56 40.1	-0 35 56.9	191 4 29.9	3 48 20.6	228 36 1.0	5 4 30.9
11.5	145 9 40.3	+0 2 49.0	198 9 22.9	4 10 46.3	235 18 22.2	5 2 27.7
12.0	152 25 5.7	0 41 43.0	205 12 49.3	4 29 15.3	241 57 36.4	4 56 18.0
12.5	159 42 27.0	1 20 3.7	212 14 14.4	4 43 32.5	248 33 29.2	4 46 12.7
13.0	167 1 8.3	1 57 9.7	219 13 1.9	4 53 28.4	255 5 47.5	4 32 25.7
13.5	174 20 27.6	2 32 19.9	226 8 36.2	4 58 58.9	261 34 20.5	4 15 14.0
14.0	181 39 37.8	3 4 55.9	233 0 24.5	5 0 5.4	267 59 0.7	3 54 56.5
14.5	188 57 47.5	3 34 22.5	239 47 58.0	4 56 54.5	274 19 44.4	3 31 53.7
15.0	196 14 4.0	4 0 9.7	246 30 52.3	4 49 37.0	280 36 32.1	3 6 27.3
15.5	203 27 34.2	4 21 53.5	253 8 49.0	4 38 27.9	286 49 28.5	2 38 59.9
16.0	210 37 27.3	4 39 16.8	259 41 37.0	4 23 44.7	292 58 42.9	2 9 53.9
16.5	217 42 57.3	4 52 8.9	266 9 12.3	4 5 47.0	299 4 29.3	1 39 31.6
17.0	224 43 24.4	5 0 26.0	272 31 37.8	3 44 56.2	305 7 6.0	1 8 14.5
17.5	231 38 16.7	5 4 10.7	278 49 3.8	3 21 34.2	311 6 55.2	0 36 23.4
18.0	238 27 11.1	5 3 30.5	285 1 46.5	2 56 2.7	317 4 22.9	+0 4 18.2
18.5	245 9 53.8	4 58 37.7	291 10 7.8	2 28 43.4	322 59 58.8	-0 27 42.0
19.0	251 46 20.6	4 49 47.8	297 14 35.1	1 59 57.0	328 54 15.3	0 59 19.0
19.5	258 16 36.0	4 37 18.6	303 15 39.7	1 30 3.8	334 47 47.4	1 30 15.6
20.0	264 40 52.4	4 21 29.6	309 13 56.7	0 59 22.8	340 41 12.5	2 0 14.9
20.5	270 59 29.6	4 2 40.8	315 10 4.0	+0 28 12.6	346 35 9.5	2 29 0.6
21.0	277 12 53.4	3 41 12.5	321 4 41.5	-0 3 9.1	352 30 18.4	2 56 16.5
21.5	283 21 34.4	3 17 24.8	326 58 30.6	0 34 25.1	358 27 19.8	3 21 46.8
22.0	289 26 7.5	2 51 37.2	332 52 13.4	1 5 18.6	4 26 54.1	3 45 15.3
22.5	295 27 10.3	2 24 8.6	338 46 32.5	1 35 32.9	10 29 40.8	4 6 25.6
23.0	301 25 22.5	1 55 17.4	344 42 9.9	2 4 51.3	16 36 18.3	4 25 1.2
23.5	307 21 25.1	1 25 21.3	350 39 46.2	2 32 56.7	22 47 22.2	4 40 45.4
24.0	313 15 59.7	0 54 37.8	356 40 0.2	2 59 31.8	29 3 25.2	4 53 21.4
24.5	319 9 47.6	+0 23 23.9	2 43 28.2	3 24 18.7	35 24 55.6	5 2 32.6
25.0	325 3 29.5	-0 8 3.5	8 50 43.2	3 46 59.0	41 52 16.7	5 8 3.1
25.5	330 57 44.5	0 39 27.0	15 2 14.2	4 7 13.9	48 25 45.2	5 9 38.1
26.0	336 53 9.8	1 10 29.2	21 18 25.3	4 24 44.7	55 5 31.3	5 7 4.9
26.5	342 50 20.2	1 40 52.2	27 39 35.2	4 39 12.5	61 51 36.8	5 0 13.5
27.0	348 49 47.7	2 10 17.5	34 5 56.4	4 50 19.4	68 43 54.0	4 48 57.7
27.5	354 52 1.0	2 38 26.1	40 37 35.0	4 57 48.3	75 42 6.6	4 33 16.0
28.0	0 57 24.4	3 4 58.5	47 14 29.5	5 1 24.4	82 45 49.6	4 13 12.5
28.5	7 6 18.0	3 29 34.8	53 56 31.2	5 0 55.4	89 54 29.0	3 48 57.5
29.0	13 18 57.5	3 51 54.9	60 43 24.6	4 56 12.4	97 7 23.7	3 20 48.0
29.5	19 35 34.0	4 11 38.9	67 34 47.5	4 47 10.6	104 23 46.4	2 49 7.8
30.0	25 56 13.9	4 28 27.7	74 30 12.3	4 33 50.4	111 42 45.6	2 14 27.4
30.5	32 20 58.0	4 42 2.9	81 29 6.5	4 16 17.3	119 3 27.9	1 37 22.5
31.0	38 49 42.3	4 52 8.4	88 30 55.2	3 54 42.7	126 24 59.2	0 58 33.3
31.5	45 22 18.8	-4 58 29.5	95 35 1.3	-3 29 23.2	133 46 28.0	-0 18 43.3

ASTRONOMICAL EPHEMERIS

FOR THE

MERIDIAN OF WASHINGTON.

250 OBLIQUITY OF THE ECLIPTIC, &c.

Mean Noon.	Apparent Obliquity.	Equation of Equinoxes.		Precession of Equinoxes in Longitude.	The Sun's		Mean Longitude of Moon's Ascending Node.
		In Longitude.	In R. A.		Aberration.	Hor. Parallax.	
1868.	23° 27'						
Jan. 1	13.49	— 6.12	— 0.38	0.00	—20.80	8.72	158° 2.8
11	13.61	5.86	0.36	1.38	20.79	8.72	157 31.0
21	13.79	5.71	0.35	2.75	20.77	8.72	156 59.3
31	13.99	5.70	0.35	4.13	20.74	8.71	156 27.5
Feb. 10	14.21	5.85	0.36	5.50	20.71	8.69	155 55.7
20	14.42	6.15	0.38	6.88	20.67	8.67	155 24.0
Mar. 1	14.58	6.59	0.40	8.26	20.63	8.65	154 52.2
11	14.70	7.12	0.44	9.63	20.57	8.63	154 20.4
21	14.75	7.70	0.47	11.01	20.51	8.61	153 48.6
31	14.74	8.27	0.51	12.38	20.45	8.58	153 16.9
Apr. 10	14.66	8.78	0.54	13.76	20.39	8.56	152 45.1
20	14.54	9.20	0.57	15.14	20.34	8.53	152 13.3
30	14.40	9.49	0.58	16.51	20.29	8.51	151 41.5
May 10	14.24	9.64	0.59	17.89	20.24	8.49	151 9.8
20	14.10	9.65	0.59	19.26	20.19	8.47	150 38.0
30	13.99	9.54	0.59	20.64	20.16	8.46	150 6.2
June 9	13.92	9.35	0.57	22.02	20.13	8.45	149 34.5
19	13.92	9.10	0.56	23.39	20.11	8.44	149 2.7
29	13.97	8.84	0.54	24.77	20.11	8.44	148 30.9
July 9	14.09	8.63	0.53	26.14	20.10	8.44	147 59.2
19	14.25	8.49	0.52	27.52	20.12	8.44	147 27.4
29	14.45	8.47	0.52	28.89	20.14	8.45	146 55.6
Aug. 8	14.66	8.57	0.53	30.27	20.17	8.46	146 23.8
18	14.88	8.81	0.54	31.65	20.20	8.48	145 52.1
28	15.07	9.18	0.56	33.02	20.24	8.50	145 20.3
Sept. 7	15.23	9.65	0.59	34.40	20.29	8.52	144 48.5
17	15.32	10.20	0.63	35.77	20.35	8.54	144 16.7
27	15.36	10.76	0.66	37.15	20.41	8.56	143 44.9
Oct. 7	15.34	11.29	0.69	38.53	20.47	8.59	143 13.2
17	15.25	11.76	0.72	39.90	20.53	8.61	142 41.4
27	15.13	12.10	0.74	41.28	20.59	8.64	142 9.6
Nov. 6	14.98	12.30	0.76	42.65	20.64	8.66	141 37.9
16	14.84	12.34	0.76	44.03	20.69	8.68	141 6.1
26	14.71	12.23	0.75	45.41	20.73	8.70	140 34.3
Dec. 6	14.63	11.99	0.74	46.78	20.76	8.71	140 2.6
16	14.60	11.66	0.71	48.16	20.78	8.72	139 30.8
26	14.65	11.30	0.69	49.53	20.79	8.72	138 59.0
36	14.76	—10.98	—0.67	50.91	—20.79	8.72	138 27.2

Mean Obliquity, 1868.0, **23° 27' 22.63**

Precession for 1868.5, **50.2566**

Log. Precession in a Sidereal Day, **9.13741**

Log. Precession in a Solar Day, **9.13860**

Late discussions give the Hor. Parallax 0".3 greater.

Daily Motion.

— 3.177

FOR WASHINGTON MEAN MIDNIGHT.

LOGARITHMS FOR CORRECTING THE PLACES OF THE FIXED STARS.

Date	A.	B.	C.	D.	Date.	A.	B.	C.	D.
Jan. 1	-9.0724	+0.9608	-0.5594	+1.3023	Mar. 1	+8.5588	+0.9011	-1.2512	+0.8019
2	9.0601	0.9602	0.5068	1.3007	2	8.5793	0.9062	1.2536	0.7779
3	9.0474	0.9597	0.6312	1.2990	3	8.5987	0.8994	1.2559	0.7522
4	9.0344	0.9591	0.6630	1.2971	4	8.6170	0.8967	1.2580	0.7249
5	9.0211	0.9585	0.6924	1.2951	5	8.6344	0.8980	1.2600	0.6957
6	-9.0075	+0.9578	-0.7200	+1.2929	6	+8.6510	+0.8973	-1.2618	+0.6643
7	8.9934	0.9571	0.7455	1.2906	7	8.6669	0.8966	1.2635	0.6302
8	8.9789	0.9564	0.7697	1.2881	8	8.6822	0.8960	1.2650	0.5933
9	8.9640	0.9557	0.7924	1.2855	9	8.6968	0.8954	1.2665	0.5527
10	8.9487	0.9549	0.8138	1.2827	10	8.7108	0.8948	1.2677	0.5077
11	-8.9329	+0.9541	-0.8342	+1.2798	11	+8.7243	+0.8943	-1.2688	+0.4574
12	8.9167	0.9533	0.8535	1.2767	12	8.7373	0.8938	1.2698	0.4004
13	8.9000	0.9525	0.8716	1.2734	13	8.7498	0.8933	1.2707	0.3347
14	8.8828	0.9516	0.8891	1.2700	14	8.7620	0.8929	1.2715	0.2570
15	8.8650	0.9507	0.9057	1.2664	15	8.7739	0.8925	1.2721	0.1626
16	-8.8465	+0.9498	-0.9215	+1.2627	16	+8.7855	+0.8921	-1.2725	+0.0414
17	8.8274	0.9488	0.9368	1.2587	17	8.7977	0.8918	1.2728	9.8722
18	8.8077	0.9478	0.9513	1.2546	18	8.8076	0.8915	1.2731	9.5922
19	8.7872	0.9469	0.9653	1.2504	19	8.8182	0.8913	1.2731	+8.5682
20	8.7658	0.9459	0.9786	1.2459	20	8.8285	0.8911	1.2731	-9.5011
21	-8.7436	+0.9448	-0.9915	+1.2413	21	+8.8385	+0.8909	-1.2729	-9.8261
22	8.7204	0.9438	1.0038	1.2364	22	8.8484	0.8907	1.2726	0.0099
23	8.6962	0.9427	1.0155	1.2314	23	8.8581	0.8906	1.2721	0.1386
24	8.6708	0.9417	1.0270	1.2262	24	8.8675	0.8906	1.2716	0.2378
25	8.6440	0.9406	1.0380	1.2208	25	8.8769	0.8905	1.2709	0.3181
26	-8.6160	+0.9394	-1.0486	+1.2152	26	+8.8860	+0.8905	-1.2700	-0.3856
27	8.5863	0.9383	1.0587	1.2094	27	8.8950	0.8906	1.2691	0.4442
28	8.5547	0.9372	1.0686	1.2033	28	8.9039	0.8907	1.2680	0.4954
29	8.5211	0.9360	1.0780	1.1970	29	8.9126	0.8908	1.2668	0.5412
30	8.4852	0.9349	1.0871	1.1905	30	8.9212	0.8909	1.2654	0.5824
31	-8.4465	+0.9337	-1.0960	+1.1838	31	+8.9296	+0.8911	-1.2639	-0.6200
Feb. 1	8.4047	0.9325	1.1044	1.1768	Apr. 1	8.9380	0.8913	1.2623	0.6545
2	8.3589	0.9314	1.1126	1.1696	2	8.9463	0.8915	1.2606	0.6861
3	8.3084	0.9302	1.1205	1.1622	3	8.9545	0.8918	1.2586	0.7156
4	8.2519	0.9290	1.1281	1.1544	4	8.9627	0.8921	1.2566	0.7430
5	-8.1878	+0.9278	-1.1355	+1.1464	5	+8.9707	+0.8925	-1.2545	-0.7687
6	8.1139	0.9267	1.1426	1.1381	6	8.9786	0.8928	1.2522	0.7928
7	8.0261	0.9255	1.1494	1.1295	7	8.9865	0.8932	1.2497	0.8156
8	7.9175	0.9243	1.1560	1.1206	8	8.9943	0.8936	1.2471	0.8370
9	7.7745	0.9231	1.1623	1.1113	9	9.0021	0.8941	1.2444	0.8573
10	-7.5647	+0.9219	-1.1685	+1.1018	10	+9.0098	+0.8945	-1.2415	-0.8766
11	-7.1523	0.9207	1.1744	1.0919	11	9.0175	0.8950	1.2385	0.8949
12	+6.9031	0.9196	1.1801	1.0815	12	9.0251	0.8956	1.2354	0.9123
13	7.4757	0.9184	1.1856	1.0709	13	9.0327	0.8961	1.2321	0.9290
14	7.7127	0.9173	1.1909	1.0598	14	9.0402	0.8967	1.2286	0.9447
15	+7.8633	+0.9161	-1.1960	+1.0483	15	+9.0477	+0.8972	-1.2250	-0.9599
16	7.9736	0.9150	1.2009	1.0364	16	9.0551	0.8978	1.2212	0.9745
17	8.0603	0.9139	1.2056	1.0240	17	9.0626	0.8985	1.2173	0.9884
18	8.1316	0.9128	1.2102	1.0111	18	9.0699	0.8991	1.2132	1.0018
19	8.1923	0.9117	1.2145	0.9977	19	9.0773	0.8998	1.2090	1.0146
20	+8.2448	+0.9106	-1.2187	+0.9836	20	+9.0846	+0.9004	-1.2045	-1.0270
21	8.2912	0.9096	1.2226	0.9691	21	9.0919	0.9011	1.2000	1.0389
22	8.3324	0.9085	1.2264	0.9538	22	9.0991	0.9018	1.1952	1.0503
23	8.3696	0.9075	1.2301	0.9379	23	9.1064	0.9025	1.1903	1.0613
24	8.4033	0.9065	1.2336	0.9212	24	9.1136	0.9032	1.1851	1.0720
25	+8.4341	+0.9056	-1.2269	+0.9038	25	+9.1207	+0.9040	-1.1798	-1.0822
26	8.4626	0.9046	1.2401	0.8855	26	9.1279	0.9047	1.1743	1.0920
27	8.4890	0.9037	1.2431	0.8663	27	9.1350	0.9055	1.1686	1.1016
28	8.5138	0.9028	1.2460	0.8459	28	9.1421	0.9062	1.1627	1.1108
29	8.5369	0.9019	1.2487	0.8246	29	9.1491	0.9070	1.1567	1.1197
30	+8.5588	+0.9011	-1.2512	+0.8019	30	+9.1561	+0.9077	-1.1504	-1.1282
31	+8.5793	+0.9002	-1.2536	+0.7779	31	+9.1631	+0.9085	-1.1439	-1.1365

FOR WASHINGTON MEAN MIDNIGHT.

LOGARITHMS FOR CORRECTING THE PLACES OF THE FIXED STARS.

Date.	A.	B.	C.	D.	Date.	A.	B.	C.	D.
May 1	+9.1631	+0.9085	-1.1439	-1.1365	July. 1	+9.5148	+0.9243	+0.5349	-1.3032
2	9.1701	0.9093	1.1371	1.1445	2	9.5190	0.9237	0.5722	1.3019
3	9.1770	0.9100	1.1301	1.1522	3	9.5231	0.9231	0.6063	1.3003
4	9.1839	0.9108	1.1230	1.1597	4	9.5272	0.9224	0.6378	1.2986
5	9.1908	0.9115	1.1155	1.1669	5	9.5313	0.9218	0.6671	1.2969
6	+9.1977	+0.9123	-1.1078	-1.1739	6	+9.5353	+0.9210	+0.6943	-1.2950
7	9.2045	0.9131	1.0999	1.1806	7	9.5392	0.9203	0.7199	1.2929
8	9.2112	0.9138	1.0916	1.1871	8	9.5431	0.9195	0.7440	1.2908
9	9.2180	0.9145	1.0831	1.1934	9	9.5470	0.9187	0.7667	1.2885
10	9.2247	0.9153	1.0742	1.1995	10	9.5508	0.9179	0.7882	1.2860
11	+9.2314	+0.9160	-1.0652	-1.2054	11	+9.5545	+0.9171	+0.8085	-1.2834
12	9.2381	0.9167	1.0558	1.2110	12	9.5582	0.9162	0.8278	1.2807
13	9.2447	0.9174	1.0450	1.2165	13	9.5618	0.9153	0.8461	1.2779
14	9.2513	0.9181	1.0350	1.2218	14	9.5654	0.9144	0.8637	1.2749
15	9.2579	0.9188	1.0254	1.2269	15	9.5689	0.9134	0.8804	1.2718
16	+9.2644	+0.9194	-1.0146	-1.2318	16	+9.5724	+0.9124	+0.8963	-1.2685
17	9.2709	0.9201	1.0034	1.2365	17	9.5758	0.9114	0.9116	1.2650
18	9.2773	0.9208	0.9917	1.2411	18	9.5792	0.9104	0.9262	1.2615
19	9.2838	0.9214	0.9796	1.2455	19	9.5825	0.9094	0.9404	1.2577
20	9.2901	0.9220	0.9670	1.2498	20	9.5858	0.9083	0.9539	1.2538
21	+9.2964	+0.9226	-0.9539	-1.2538	21	+9.5890	+0.9072	+0.9669	-1.2498
22	9.3027	0.9232	0.9403	1.2578	22	9.5922	0.9061	0.9794	1.2456
23	9.3090	0.9237	0.9261	1.2615	23	9.5953	0.9050	1.0014	1.2413
24	9.3152	0.9242	0.9114	1.2651	24	9.5984	0.9038	1.0029	1.2367
25	9.3213	0.9247	0.8960	1.2685	25	9.6014	0.9027	1.0142	1.2321
26	+9.3275	+0.9252	-0.8800	-1.2718	26	+9.6044	+0.9015	+1.0250	-1.2271
27	9.3335	0.9257	0.8631	1.2749	27	9.6073	0.9003	1.0354	1.2221
28	9.3396	0.9261	0.8455	1.2780	28	9.6102	0.8991	1.0455	1.2169
29	9.3456	0.9265	0.8271	1.2808	29	9.6130	0.8978	1.0551	1.2115
30	9.3515	0.9269	0.8076	1.2835	30	9.6158	0.8966	1.0645	1.2059
31	+9.3574	+0.9273	-0.7873	-1.2861	31	+9.6185	+0.8954	+1.0736	-1.2001
June 1	9.3632	0.9277	0.7656	1.2886	Aug. 1	9.6212	0.8941	1.0824	1.1940
2	9.3690	0.9280	0.7427	1.2909	2	9.6239	0.8928	1.0908	1.1878
3	9.3747	0.9283	0.7186	1.2930	3	9.6265	0.8916	1.0990	1.1814
4	9.3804	0.9285	0.6928	1.2950	4	9.6290	0.8903	1.1070	1.1747
5	+9.3861	+0.9288	-0.6652	-1.2970	5	+9.6315	+0.8890	+1.1146	-1.1679
6	9.3917	0.9290	0.6357	1.2988	6	9.6340	0.8877	1.1220	1.1607
7	9.3973	0.9292	0.6039	1.3004	7	9.6365	0.8864	1.1292	1.1534
8	9.4028	0.9293	0.5694	1.3019	8	9.6389	0.8850	1.1361	1.1457
9	9.4083	0.9294	0.5319	1.3033	9	9.6412	0.8837	1.1428	1.1378
10	+9.4137	+0.9295	-0.4907	-1.3046	10	+9.6435	+0.8824	+1.1493	-1.1297
11	9.4190	0.9296	0.4450	1.3057	11	9.6458	0.8811	1.1556	1.1213
12	9.4243	0.9296	0.3938	1.3068	12	9.6480	0.8798	1.1616	1.1125
13	9.4296	0.9296	0.3359	1.3077	13	9.6502	0.8785	1.1675	1.1035
14	9.4347	0.9296	0.2686	1.3085	14	9.6524	0.8772	1.1732	1.0941
15	+9.4399	+0.9295	-0.1892	-1.3091	15	+9.6545	+0.8759	+1.1786	-1.0844
16	9.4450	0.9294	0.0917	1.3097	16	9.6566	0.8746	1.1839	1.0743
17	9.4500	0.9293	0.9652	1.3101	17	9.6587	0.8733	1.1890	1.0639
18	9.4550	0.9292	0.7860	1.3104	18	9.6607	0.8720	1.1940	1.0531
19	9.4599	0.9290	-0.4742	1.3105	19	9.6627	0.8708	1.1987	1.0419
20	+9.4648	+0.9288	+8.1461	-1.3106	20	+9.6646	+0.8695	+1.2033	-1.0303
21	9.4696	0.9285	9.5119	1.3105	21	9.6665	0.8683	1.2077	1.0181
22	9.4744	0.9282	9.8048	1.3103	22	9.6684	0.8670	1.2120	1.0056
23	9.4791	0.9279	9.9777	1.3100	23	9.6703	0.8658	1.2161	0.9925
24	9.4837	0.9276	0.1007	1.3096	24	9.6721	0.8646	1.2200	0.9789
25	+9.4883	+0.9272	+0.1965	-1.3091	25	+9.6739	+0.8634	+1.2238	-0.9647
26	9.4929	0.9268	0.2749	1.3084	26	9.6757	0.8622	1.2274	0.9499
27	9.4974	0.9263	0.3410	1.3076	27	9.6774	0.8611	1.2309	0.9345
28	9.5018	0.9259	0.3986	1.3067	28	9.6792	0.8600	1.2342	0.9182
29	9.5062	0.9254	0.4490	1.3057	29	9.6809	0.8589	1.2374	0.9014
30	+9.5105	+0.9249	+0.4942	-1.3045	30	+9.6825	+0.8578	+1.2404	-0.8836
31	+9.5148	+0.9243	+0.5349	-1.3032	31	+9.6842	+0.8567	+1.2433	-0.8649

FOR WASHINGTON MEAN MIDNIGHT.

LOGARITHMS FOR CORRECTING THE PLACES OF THE FIXED STARS.

Date.	A.	B.	C.	D.	Date.	A.	B.	C.	D.
Sept. 1	+9.6858	+0.8557	+1.2460	-0.8452	Nov. 1	+9.7749	+0.8567	+1.1567	+1.1195
2	9.6374	0.8547	1.2486	0.8246	2	9.7766	0.8576	1.1562	1.1284
3	9.6890	0.8537	1.2511	0.8026	3	9.7784	0.8584	1.1435	1.1370
4	9.6905	0.8528	1.2535	0.7795	4	9.7801	0.8512	1.1365	1.1453
5	9.6921	0.8518	1.2556	0.7549	5	9.7819	0.8601	1.1292	1.1532
6	+9.6936	+0.8509	+1.2577	-0.7285	6	+9.7837	+0.8609	+1.1217	+1.1609
7	9.6951	0.8501	1.2596	0.7004	7	9.7855	0.8617	1.1139	1.1684
8	9.6966	0.8492	1.2615	0.6702	8	9.7874	0.8626	1.1059	1.1756
9	9.6981	0.8484	1.2631	0.6376	9	9.7892	0.8634	1.0975	1.1826
10	9.6995	0.8477	1.2647	0.6021	10	9.7911	0.8642	1.0888	1.1893
11	+9.7010	+0.8470	+1.2661	-0.5634	11	+9.7929	+0.8650	+1.0799	+1.1960
12	9.7024	0.8463	1.2673	0.5206	12	9.7948	0.8658	1.0706	1.2021
13	9.7038	0.8456	1.2685	0.4732	13	9.7967	0.8666	1.0609	1.2081
14	9.7052	0.8450	1.2695	0.4196	14	9.7986	0.8674	1.0509	1.2139
15	9.7066	0.8444	1.2704	0.3583	15	9.8005	0.8682	1.0404	1.2196
16	+9.7080	+0.8439	+1.2712	-0.2869	16	+9.8025	+0.8689	+1.0297	+1.2250
17	9.7094	0.8433	1.2718	0.2011	17	9.8044	0.8697	1.0185	1.2302
18	9.7107	0.8429	1.2723	0.0938	18	9.8064	0.8704	1.0067	1.2352
19	9.7121	0.8424	1.2727	0.9504	19	9.8083	0.8711	0.9947	1.2400
20	9.7134	0.8420	1.2730	0.7356	20	9.8103	0.8718	0.9820	1.2447
21	+9.7148	+0.8417	+1.2731	-0.2878	21	+9.8123	+0.8725	+0.9690	+1.2491
22	9.7161	0.8414	1.2731	+0.1903	22	9.8143	0.8731	0.9552	1.2535
23	9.7175	0.8411	1.2730	0.7033	23	9.8163	0.8737	0.9410	1.2576
24	9.7188	0.8408	1.2728	0.9320	24	9.8184	0.8743	0.9260	1.2615
25	9.7202	0.8406	1.2724	0.0810	25	9.8204	0.8749	0.9105	1.2653
26	+9.7215	+0.8405	+1.2719	-0.1920	26	+9.8224	+0.8755	+0.8941	+1.2689
27	9.7228	0.8404	1.2712	0.2799	27	9.8244	0.8760	0.8770	1.2724
28	9.7242	0.8403	1.2705	0.3530	28	9.8265	0.8765	0.8501	1.2756
29	9.7255	0.8403	1.2696	0.4155	29	9.8285	0.8769	0.8402	1.2788
30	9.7269	0.8403	1.2686	0.4700	30	9.8306	0.8774	0.8203	1.2818
Oct. 1	+0.7232	+0.8403	+1.2674	+0.5183	Dec. 1	+9.8327	+0.8778	+0.7993	+1.2846
2	9.7246	0.8404	1.2661	0.5616	2	9.8348	0.8781	0.7771	1.2873
3	9.7309	0.8405	1.2647	0.6011	3	9.8368	0.8785	0.7537	1.2898
4	9.7323	0.8406	1.2631	0.6370	4	9.8389	0.8788	0.7286	1.2922
5	9.7337	0.8408	1.2614	0.6702	5	9.8410	0.8791	0.7019	1.2944
6	+9.7350	+0.8411	+1.2596	+0.7008	6	+9.8430	+0.8793	+0.6732	+1.2965
7	9.7364	0.8413	1.2576	0.7294	7	9.8451	0.8795	0.6424	1.2984
8	9.7378	0.8417	1.2555	0.7560	8	9.8472	0.8797	0.6092	1.3002
9	9.7392	0.8420	1.2533	0.7810	9	9.8492	0.8798	0.5729	1.3018
10	9.7406	0.8424	1.2509	0.8046	10	9.8513	0.8799	0.5333	1.3033
11	+9.7420	+0.8427	+1.2483	+0.8269	11	+9.8534	+0.8800	+0.4893	+1.3046
12	9.7435	0.8432	1.2456	0.8479	12	9.8554	0.8800	0.4403	1.3059
13	9.7449	0.8436	1.2428	0.8679	13	9.8574	0.8800	0.3851	1.3069
14	9.7464	0.8441	1.2399	0.8868	14	9.8595	0.8799	0.3214	1.3079
15	9.7478	0.8446	1.2367	0.9049	15	9.8616	0.8798	0.2465	1.3087
16	+9.7493	+0.8452	+1.2334	+0.9221	16	+9.8636	+0.8797	+0.1559	+1.3093
17	9.7508	0.8458	1.2300	0.9385	17	9.8657	0.8795	0.0414	1.3098
18	9.7523	0.8464	1.2264	0.9542	18	9.8677	0.8793	0.8848	1.3102
19	9.7538	0.8470	1.2226	0.9693	19	9.8697	0.8790	0.6365	1.3105
20	9.7554	0.8476	1.2186	0.9838	20	9.8717	0.8787	+0.0000	1.3106
21	+9.7569	+0.8483	+1.2145	+0.9975	21	+9.8737	+0.8784	-0.3692	+1.3105
22	9.7585	0.8490	1.2102	1.0109	22	9.8757	0.8780	0.7536	1.3104
23	9.7600	0.8497	1.2058	1.0236	23	9.8777	0.8776	0.9542	1.3101
24	9.7616	0.8504	1.2010	1.0360	24	9.8797	0.8772	0.0910	1.3096
25	9.7632	0.8512	1.1962	1.0478	25	9.8817	0.8766	0.1948	1.3091
26	+9.7648	+0.8519	+1.1912	+1.0591	26	+9.8836	+0.8761	-0.2783	+1.3083
27	9.7665	0.8527	1.1860	1.0701	27	9.8855	0.8755	0.3485	1.3075
28	9.7681	0.8535	1.1806	1.0807	28	9.8875	0.8749	0.4084	1.3065
29	9.7698	0.8543	1.1749	1.0909	29	9.8894	0.8742	0.4611	1.3054
30	9.7715	0.8551	1.1691	1.1008	30	9.8913	0.8735	0.5079	1.3041
31	+9.7732	+0.8559	+1.1630	+1.1103	31	+9.8932	+0.8728	-0.5501	+1.3027
32	+9.7749	+0.8567	+1.1567	+1.1195	32	+9.8950	+0.8720	-0.5894	+1.3011

FOR WASHINGTON MEAN MIDNIGHT.

CONSTANTS FOR FACILITATING THE REDUCTION OF THE FIXED STARS.

1868.	μ .	f .	Log g .	α .	Log h .	δ .	Log i .	τ .
Jan. 1	-0.02	-5.44	0.9749	104 32	1.3093	349 45	-0.1968	0.0031
2	0.02	5.29	0.9736	104 10	1.3091	348 49	0.2342	0.0059
3	0.02	5.14	0.9724	103 47	1.3088	347 52	0.2686	0.0086
4	0.02	4.99	0.9711	103 25	1.3085	346 56	0.3003	0.0114
5	0.02	4.84	0.9698	103 3	1.3082	345 59	0.3298	0.0141
6	-0.02	-4.69	0.9685	102 40	1.3079	345 2	-0.3574	0.0168
7	0.02	4.54	0.9672	102 18	1.3075	344 6	0.3829	0.0196
8	0.02	4.39	0.9659	101 56	1.3072	343 8	0.4071	0.0223
9	0.02	4.24	0.9646	101 33	1.3068	342 11	0.4298	0.0251
10	0.02	4.09	0.9632	101 11	1.3064	341 14	0.4512	0.0278
11	-0.02	-3.95	0.9619	100 49	1.3060	340 17	-0.4715	0.0305
12	0.02	3.80	0.9606	100 27	1.3056	339 19	0.4908	0.0333
13	0.02	3.66	0.9592	100 5	1.3051	338 22	0.5090	0.0360
14	0.02	3.52	0.9578	99 43	1.3047	337 25	0.5265	0.0387
15	0.02	3.38	0.9565	99 21	1.3042	336 27	0.5431	0.0415
16	-0.02	-3.24	0.9551	98 59	1.3037	335 30	-0.5589	0.0442
17	0.02	3.10	0.9537	98 37	1.3032	334 31	0.5742	0.0470
18	0.02	2.96	0.9524	98 16	1.3026	333 33	0.5887	0.0497
19	0.02	2.82	0.9510	97 54	1.3021	332 35	0.6026	0.0524
20	0.02	2.69	0.9496	97 33	1.3016	331 37	0.6160	0.0552
21	-0.02	-2.55	0.9483	97 12	1.3010	330 38	-0.6289	0.0580
22	0.02	2.42	0.9469	96 50	1.3004	329 40	0.6412	0.0607
23	0.02	2.29	0.9455	96 29	1.2998	328 41	0.6529	0.0634
24	0.02	2.16	0.9441	96 8	1.2992	327 42	0.6644	0.0661
25	0.02	2.03	0.9428	95 47	1.2986	326 43	0.6754	0.0689
26	-0.02	-1.90	0.9414	95 26	1.2980	325 44	-0.6860	0.0716
27	0.02	1.78	0.9400	95 6	1.2974	324 44	0.6962	0.0743
28	0.02	1.65	0.9387	94 45	1.2968	323 45	0.7060	0.0771
29	0.02	1.53	0.9373	94 25	1.2961	322 45	0.7154	0.0798
30	0.02	1.41	0.9360	94 4	1.2955	321 45	0.7245	0.0826
31	-0.02	-1.29	0.9346	93 44	1.2949	320 45	-0.7334	0.0853
Feb. 1	0.02	1.17	0.9333	93 24	1.2941	319 45	0.7418	0.0880
2	0.02	1.05	0.9320	93 4	1.2935	318 45	0.7500	0.0907
3	0.02	0.94	0.9307	92 44	1.2929	317 44	0.7579	0.0935
4	0.02	0.82	0.9294	92 25	1.2922	316 44	0.7655	0.0962
5	-0.02	-0.71	0.9281	92 5	1.2915	315 43	-0.7729	0.0990
6	0.02	0.60	0.9269	91 46	1.2908	314 42	0.7797	0.1017
7	0.02	0.49	0.9256	91 27	1.2902	313 41	0.7868	0.1045
8	0.02	0.38	0.9244	91 8	1.2895	312 40	0.7934	0.1072
9	0.02	0.27	0.9231	90 49	1.2888	311 39	0.7997	0.1099
10	-0.02	-0.17	0.9219	90 30	1.2882	310 37	-0.8059	0.1127
11	0.02	-0.07	0.9208	90 12	1.2875	309 35	0.8118	0.1154
12	0.02	+0.04	0.9196	89 53	1.2869	308 33	0.8175	0.1181
13	0.02	0.14	0.9184	89 35	1.2863	307 31	0.8230	0.1209
14	0.02	0.24	0.9173	89 17	1.2856	306 29	0.8283	0.1236
15	-0.02	+0.34	0.9162	88 59	1.2849	305 27	-0.8334	0.1264
16	0.02	0.43	0.9151	88 41	1.2844	304 24	0.8383	0.1291
17	0.02	0.53	0.9141	88 24	1.2838	303 21	0.8430	0.1318
18	0.02	0.62	0.9130	88 6	1.2832	302 18	0.8476	0.1346
19	0.02	0.72	0.9120	87 49	1.2826	301 15	0.8519	0.1373
20	-0.02	+0.81	0.9110	87 31	1.2820	300 12	-0.8561	0.1400

FOR WASHINGTON MEAN MIDNIGHT.

CONSTANTS FOR FACILITATING THE REDUCTION OF THE FIXED STARS.

1868.	μ	f	Log g .	α .	Log h .	δ .	Log i .	τ .
Feb. 20	-0.02	+0.81	0.9110	87 31	1.2820	300 12	-0.8561	0.1400
21	0.02	0.90	0.9101	87 14	1.2815	299 9	0.8600	0.1428
22	0.02	0.99	0.9092	86 57	1.2809	298 6	0.8638	0.1455
23	0.02	1.08	0.9083	86 41	1.2804	297 2	0.8675	0.1483
24	0.02	1.17	0.9074	86 24	1.2798	295 58	0.8710	0.1510
25	-0.02	+1.25	0.9065	86 8	1.2793	294 55	-0.8743	0.1537
26	0.02	1.34	0.9057	85 51	1.2788	293 51	0.8775	0.1565
27	0.02	1.42	0.9050	85 35	1.2784	292 47	0.8805	0.1592
28	0.02	1.50	0.9042	85 19	1.2779	291 43	0.8834	0.1620
29	0.02	1.59	0.9035	85 3	1.2775	290 39	0.8861	0.1647
Mar. 1	-0.02	+1.67	0.9029	84 47	1.2770	289 34	-0.8888	0.1674
2	0.02	1.75	0.9022	84 32	1.2765	288 29	0.8910	0.1702
3	0.02	1.83	0.9016	84 16	1.2762	287 25	0.8932	0.1729
4	0.02	1.91	0.9011	84 1	1.2759	286 20	0.8954	0.1756
5	0.02	1.99	0.9005	83 46	1.2755	285 15	0.8973	0.1784
6	-0.02	+2.06	0.9000	83 31	1.2752	284 11	-0.8992	0.1811
7	0.02	2.14	0.8996	83 16	1.2749	283 6	0.9008	0.1839
8	0.02	2.22	0.8992	83 1	1.2746	282 1	0.9024	0.1866
9	0.02	2.29	0.8988	82 46	1.2744	280 56	0.9038	0.1893
10	0.02	2.37	0.8985	82 31	1.2741	279 52	0.9051	0.1921
11	-0.02	+2.44	0.8982	82 17	1.2739	278 47	-0.9062	0.1948
12	0.02	2.52	0.8980	82 2	1.2738	277 42	0.9072	0.1975
13	0.02	2.59	0.8978	81 46	1.2735	276 37	0.9081	0.2003
14	0.02	2.66	0.8976	81 34	1.2735	275 31	0.9088	0.2030
15	0.02	2.74	0.8975	81 19	1.2734	274 27	0.9094	0.2058
16	-0.02	+2.81	0.8974	81 5	1.2733	273 22	-0.9099	0.2085
17	0.02	2.89	0.8974	80 51	1.2732	272 17	0.9102	0.2112
18	0.02	2.96	0.8974	80 37	1.2732	271 12	0.9104	0.2140
19	0.02	3.03	0.8974	80 23	1.2731	270 7	0.9105	0.2167
20	0.02	3.10	0.8975	80 9	1.2732	269 2	0.9105	0.2194
21	-0.02	+3.18	0.8976	79 55	1.2732	267 57	-0.9103	0.2222
22	0.02	3.25	0.8978	79 41	1.2732	266 52	0.9100	0.2249
23	0.02	3.32	0.8980	79 28	1.2733	265 48	0.9095	0.2277
24	0.02	3.40	0.8983	79 14	1.2734	264 43	0.9090	0.2304
25	0.02	3.47	0.8986	79 0	1.2735	263 38	0.9083	0.2331
26	-0.02	+3.54	0.8989	78 46	1.2737	262 34	-0.9074	0.2359
27	0.02	3.62	0.8993	78 33	1.2739	261 29	0.9065	0.2386
28	0.02	3.69	0.8997	78 19	1.2741	260 25	0.9054	0.2414
29	0.02	3.77	0.9002	78 5	1.2743	259 21	0.9041	0.2441
30	0.02	3.84	0.9007	77 52	1.2745	258 17	0.9028	0.2468
31	-0.02	+3.92	0.9013	77 39	1.2748	257 12	-0.9013	0.2496
Apr. 1	0.02	3.99	0.9019	77 25	1.2751	256 8	0.8997	0.2523
2	0.02	4.07	0.9025	77 11	1.2754	255 3	0.8979	0.2550
3	0.02	4.15	0.9032	76 57	1.2758	254 1	0.8960	0.2578
4	0.02	4.23	0.9039	76 44	1.2761	252 58	0.8940	0.2605
5	-0.02	+4.31	0.9046	76 30	1.2765	251 54	-0.8918	0.2633
6	0.02	4.39	0.9054	76 16	1.2769	250 51	0.8895	0.2660
7	0.02	4.47	0.9062	76 2	1.2773	249 48	0.8871	0.2687
8	0.02	4.55	0.9071	75 48	1.2777	248 45	0.8845	0.2715
9	0.02	4.63	0.9080	75 35	1.2782	247 42	0.8818	0.2742
10	-0.03	+4.71	0.9089	75 21	1.2786	246 39	-0.8789	0.2760

FOR WASHINGTON MEAN MIDNIGHT.

CONSTANTS FOR FACILITATING THE REDUCTION OF THE FIXED STARS.

1868.	α .	δ .	Log g .	α .	Log h .	α .	Log i .	τ .
Apr. 10	-0.03	+ 4.71	0.9089	75° 21'	1.2786	246° 39'	-0.8789	0.2769
11	0.03	4.80	0.9099	75° 7'	1.2791	245° 37'	0.8759	0.2797
12	0.03	4.88	0.9109	74° 53'	1.2796	244° 35'	0.8728	0.2824
13	0.03	4.97	0.9119	74° 39'	1.2801	243° 33'	0.8695	0.2852
14	0.03	5.05	0.9130	74° 24'	1.2806	242° 31'	0.8660	0.2879
15	-0.03	+ 5.14	0.9140	74° 10'	1.2811	241° 29'	-0.8624	0.2906
16	0.03	5.23	0.9152	73° 56'	1.2817	240° 28'	0.8586	0.2934
17	0.03	5.32	0.9163	73° 41'	1.2822	239° 26'	0.8547	0.2961
18	0.03	5.41	0.9175	73° 27'	1.2828	238° 26'	0.8506	0.2988
19	0.03	5.51	0.9187	73° 12'	1.2833	237° 25'	0.8463	0.3016
20	-0.03	+ 5.60	0.9199	72° 58'	1.2839	236° 24'	-0.8419	0.3043
21	0.03	5.69	0.9212	72° 43'	1.2845	235° 23'	0.8373	0.3071
22	0.03	5.79	0.9225	72° 28'	1.2851	234° 23'	0.8326	0.3098
23	0.03	5.89	0.9238	72° 13'	1.2857	233° 23'	0.8276	0.3125
24	0.03	5.99	0.9251	71° 58'	1.2863	232° 23'	0.8225	0.3153
25	-0.03	+ 6.09	0.9265	71° 43'	1.2870	231° 23'	-0.8172	0.3180
26	0.03	6.19	0.9278	71° 28'	1.2876	230° 24'	0.8117	0.3208
27	0.03	6.29	0.9292	71° 13'	1.2882	229° 24'	0.8060	0.3235
28	0.03	6.39	0.9306	70° 57'	1.2889	228° 25'	0.8001	0.3262
29	0.03	6.50	0.9321	70° 42'	1.2895	227° 26'	0.7941	0.3290
30	-0.03	+ 6.60	0.9335	70° 26'	1.2901	226° 28'	-0.7878	0.3317
May 1	0.03	6.71	0.9350	70° 11'	1.2908	225° 29'	0.7813	0.3344
2	0.03	6.82	0.9365	69° 55'	1.2914	224° 31'	0.7745	0.3372
3	0.03	6.93	0.9380	69° 39'	1.2920	223° 33'	0.7675	0.3399
4	0.03	7.04	0.9395	69° 23'	1.2926	222° 35'	0.7604	0.3427
5	-0.03	+ 7.15	0.9410	69° 7'	1.2932	221° 37'	-0.7529	0.3454
6	0.03	7.26	0.9426	68° 51'	1.2939	220° 40'	0.7452	0.3481
7	0.03	7.38	0.9441	68° 35'	1.2945	219° 42'	0.7373	0.3509
8	0.03	7.49	0.9457	68° 19'	1.2951	218° 45'	0.7290	0.3536
9	0.03	7.61	0.9473	68° 2'	1.2957	217° 48'	0.7205	0.3563
10	-0.03	+ 7.73	0.9489	67° 46'	1.2963	216° 51'	-0.7116	0.3591
11	0.03	7.85	0.9505	67° 29'	1.2969	215° 55'	0.7026	0.3618
12	0.03	7.97	0.9521	67° 12'	1.2975	214° 58'	0.6932	0.3645
13	0.03	8.10	0.9537	66° 55'	1.2981	214° 2'	0.6833	0.3673
14	0.03	8.22	0.9553	66° 38'	1.2987	213° 6'	0.6732	0.3700
15	-0.03	+ 8.34	0.9569	66° 21'	1.2992	212° 10'	-0.6628	0.3728
16	0.03	8.47	0.9585	66° 4'	1.2998	211° 14'	0.6520	0.3755
17	0.03	8.60	0.9601	65° 47'	1.3004	210° 19'	0.6408	0.3782
18	0.03	8.73	0.9618	65° 30'	1.3009	209° 23'	0.6291	0.3810
19	0.03	8.86	0.9634	65° 12'	1.3014	208° 28'	0.6170	0.3837
20	-0.03	+ 8.99	0.9650	64° 55'	1.3020	207° 32'	-0.6044	0.3865
21	0.03	9.12	0.9667	64° 37'	1.3025	206° 37'	0.5913	0.3892
22	0.03	9.25	0.9683	64° 20'	1.3030	205° 43'	0.5777	0.3919
23	0.03	9.39	0.9699	64° 2'	1.3035	204° 48'	0.5635	0.3947
24	0.03	9.52	0.9715	63° 44'	1.3040	203° 53'	0.5488	0.3974
25	-0.03	+ 9.66	0.9732	63° 27'	1.3044	202° 59'	-0.5334	0.4002
26	0.03	9.79	0.9748	63° 9'	1.3049	202° 5'	0.5174	0.4029
27	0.03	9.93	0.9764	62° 51'	1.3053	201° 11'	0.5005	0.4056
28	0.03	10.07	0.9780	62° 32'	1.3057	200° 17'	0.4829	0.4084
29	0.03	10.21	0.9796	62° 14'	1.3061	199° 23'	0.4644	0.4111
30	-0.03	+10.35	0.9812	61° 56'	1.3065	198° 29'	-0.4450	0.4138

FOR WASHINGTON MEAN MIDNIGHT.

CONSTANTS FOR FACILITATING THE REDUCTION OF THE FIXED STARS.

1868.	μ .	f .	Log g .	α .	Log h .	δ .	Log i .	τ .
May 30	-0.03	+10.35	0.9812	61 56	1.3065	198 29	-0.4450	0.4138
31	0.03	10.49	0.9828	61 38	1.3069	197 35	0.4246	0.4166
June 1	0.03	10.64	0.9844	61 20	1.3073	196 42	0.4030	0.4193
2	0.03	10.78	0.9860	61 2	1.3076	195 48	0.3801	0.4221
3	0.03	10.92	0.9876	60 43	1.3079	194 55	0.3560	0.4248
4	-0.03	+11.07	0.9892	60 25	1.3082	194 2	-0.3302	0.4275
5	0.03	11.21	0.9908	60 7	1.3085	193 8	0.3026	0.4303
6	0.03	11.36	0.9923	59 48	1.3088	192 15	0.2731	0.4330
7	0.03	11.50	0.9939	59 29	1.3090	191 22	0.2413	0.4357
8	0.03	11.65	0.9954	59 11	1.3093	190 29	0.2068	0.4385
9	-0.03	+11.80	0.9970	58 52	1.3095	189 36	-0.1693	0.4412
10	0.03	11.95	0.9985	58 33	1.3097	188 44	0.1281	0.4440
11	0.03	12.09	1.0000	58 15	1.3098	187 51	0.0824	0.4467
12	0.03	12.24	1.0015	57 56	1.3100	186 58	0.0311	0.4494
13	0.03	12.39	1.0030	57 37	1.3101	186 5	9.9733	0.4522
14	-0.03	+12.54	1.0045	57 19	1.3103	185 13	-9.9060	0.4549
15	0.03	12.69	1.0059	57 0	1.3104	184 20	9.8266	0.4576
16	0.03	12.85	1.0074	56 41	1.3105	183 28	9.7291	0.4604
17	0.03	12.99	1.0089	56 22	1.3105	182 35	9.6126	0.4631
18	0.03	13.14	1.0103	56 4	1.3106	181 43	9.4234	0.4659
19	-0.03	+13.29	1.0117	55 45	1.3106	180 50	-9.1116	0.4686
20	0.03	13.44	1.0131	55 26	1.3106	179 58	+7.7835	0.4713
21	0.03	13.59	1.0145	55 7	1.3106	179 5	9.1493	0.4741
22	0.03	13.74	1.0159	54 48	1.3105	178 13	9.4422	0.4768
23	0.03	13.89	1.0173	54 30	1.3105	177 20	9.6151	0.4796
24	-0.03	+14.04	1.0186	54 11	1.3104	176 28	+9.7381	0.4823
25	0.03	14.19	1.0200	53 52	1.3103	175 35	9.8338	0.4850
26	0.03	14.34	1.0213	53 33	1.3102	174 43	9.9122	0.4878
27	0.03	14.48	1.0226	53 15	1.3101	173 50	9.9784	0.4905
28	0.03	14.63	1.0239	52 56	1.3100	172 57	0.0360	0.4932
29	-0.03	+14.78	1.0252	52 38	1.3098	172 5	+0.0864	0.4960
30	0.02	14.93	1.0265	52 19	1.3097	171 12	0.1315	0.4987
July 1	0.02	15.08	1.0277	52 0	1.3095	170 20	0.1723	0.5015
2	0.02	15.22	1.0290	51 41	1.3093	169 27	0.2056	0.5042
3	0.02	15.37	1.0302	51 24	1.3089	168 34	0.2437	0.5069
4	-0.02	+15.52	1.0314	51 5	1.3087	167 41	+0.2752	0.5097
5	0.02	15.66	1.0326	50 47	1.3085	166 48	0.3045	0.5124
6	0.02	15.81	1.0338	50 29	1.3082	165 55	0.3317	0.5151
7	0.02	15.95	1.0350	50 11	1.3079	165 2	0.3573	0.5179
8	0.02	16.09	1.0361	49 52	1.3076	164 9	0.3814	0.5206
9	-0.02	+16.24	1.0373	49 34	1.3073	163 16	+0.4041	0.5234
10	0.02	16.38	1.0384	49 16	1.3069	162 22	0.4255	0.5261
11	0.02	16.52	1.0395	48 58	1.3065	161 29	0.4459	0.5288
12	0.02	16.66	1.0406	48 40	1.3061	160 35	0.4652	0.5316
13	0.02	16.80	1.0417	48 22	1.3057	159 42	0.4835	0.5343
14	-0.02	+16.94	1.0428	48 5	1.3053	158 48	+0.5011	0.5370
15	0.02	17.08	1.0438	47 47	1.3049	157 54	0.5178	0.5398
16	0.02	17.22	1.0449	47 30	1.3044	157 0	0.5337	0.5425
17	0.02	17.35	1.0459	47 12	1.3040	156 6	0.5490	0.5453
18	0.02	17.49	1.0469	46 55	1.3035	155 12	0.5636	0.5480
19	-0.02	+17.62	1.0479	46 37	1.3030	154 17	+0.5778	0.5507

FOR WASHINGTON MEAN MIDNIGHT.

CONSTANTS FOR FACILITATING THE REDUCTION OF THE FIXED STARS.

1868.	α .	δ .	Log g .	α .	Log h .	δ .	Log i .	τ .
July 19	-0.02	+17.62	1.0479	46° 37'	1.3030	154° 17'	+0.5778	0.5507
20	0.02	17.75	1.0489	46 20	1.3025	153 23	0.5913	0.5535
21	0.02	17.89	1.0498	46 3	1.3020	152 28	0.6042	0.5562
22	0.02	18.02	1.0508	45 46	1.3015	151 33	0.6168	0.5589
23	0.02	18.15	1.0518	45 30	1.3010	150 39	0.6288	0.5617
24	-0.02	+18.28	1.0527	45 13	1.3004	149 44	+0.6403	0.5644
25	0.02	18.40	1.0537	44 56	1.2999	148 48	0.6516	0.5672
26	0.02	18.53	1.0546	44 40	1.2993	147 53	0.6624	0.5699
27	0.02	18.66	1.0555	44 23	1.2987	146 57	0.6727	0.5726
28	0.02	18.78	1.0564	44 7	1.2982	146 1	0.6829	0.5754
29	-0.02	+18.90	1.0572	43 51	1.2976	145 6	+0.6925	0.5781
30	0.02	19.02	1.0581	43 35	1.2970	144 10	0.7019	0.5809
31	0.02	19.14	1.0589	43 20	1.2964	143 14	0.7110	0.5836
Aug. 1	0.02	19.26	1.0598	43 4	1.2959	142 17	0.7198	0.5863
2	0.02	19.38	1.0606	42 49	1.2952	141 21	0.7282	0.5890
3	-0.02	+19.50	1.0614	42 33	1.2945	140 25	+0.7364	0.5918
4	0.02	19.61	1.0622	42 18	1.2940	139 27	0.7444	0.5945
5	0.02	19.73	1.0630	42 3	1.2934	138 30	0.7520	0.5972
6	0.02	19.84	1.0638	41 48	1.2927	137 33	0.7594	0.6000
7	0.02	19.95	1.0646	41 33	1.2921	136 36	0.7666	0.6028
8	-0.02	+20.06	1.0654	41 19	1.2915	135 38	+0.7735	0.6055
9	0.02	20.17	1.0662	41 4	1.2908	134 40	0.7802	0.6082
10	0.02	20.28	1.0669	40 50	1.2902	133 42	0.7867	0.6110
11	0.02	20.39	1.0677	40 36	1.2896	132 44	0.7930	0.6137
12	0.02	20.49	1.0684	40 22	1.2890	131 46	0.7990	0.6164
13	-0.02	+20.59	1.0691	40 9	1.2884	130 48	+0.8049	0.6192
14	0.02	20.70	1.0698	39 55	1.2877	129 49	0.8106	0.6219
15	0.02	20.80	1.0706	39 42	1.2871	128 50	0.8160	0.6247
16	0.02	20.90	1.0713	39 29	1.2865	127 51	0.8213	0.6274
17	0.02	21.00	1.0720	39 16	1.2859	126 52	0.8264	0.6301
18	-0.02	+21.10	1.0727	39 3	1.2853	125 52	+0.8314	0.6329
19	0.02	21.19	1.0734	38 50	1.2847	124 52	0.8361	0.6356
20	0.02	21.29	1.0741	38 38	1.2841	123 53	0.8407	0.6383
21	0.02	21.38	1.0748	38 26	1.2835	122 52	0.8451	0.6411
22	0.03	21.48	1.0755	38 14	1.2830	121 52	0.8494	0.6438
23	-0.03	+21.57	1.0762	38 2	1.2824	120 52	+0.8535	0.6466
24	0.03	21.66	1.0769	37 50	1.2818	119 51	0.8574	0.6493
25	0.03	21.75	1.0775	37 39	1.2813	118 51	0.8612	0.6520
26	0.03	21.85	1.0782	37 28	1.2808	117 50	0.8648	0.6548
27	0.03	21.93	1.0789	37 17	1.2802	116 49	0.8683	0.6575
28	-0.03	+22.01	1.0796	37 6	1.2797	115 47	+0.8716	0.6603
29	0.03	22.10	1.0802	36 55	1.2793	114 46	0.8748	0.6630
30	0.03	22.18	1.0809	36 45	1.2788	113 44	0.8778	0.6657
31	0.03	22.27	1.0816	36 34	1.2783	112 42	0.8807	0.6685
Sept. 1	0.03	22.35	1.0823	36 24	1.2779	111 40	0.8834	0.6712
2	-0.03	+22.44	1.0830	36 14	1.2775	110 38	+0.8860	0.6739
3	0.03	22.52	1.0837	36 5	1.2770	109 36	0.8885	0.6767
4	0.03	22.60	1.0844	35 55	1.2767	108 34	0.8909	0.6794
5	0.03	22.68	1.0851	35 46	1.2763	107 31	0.8930	0.6822
6	0.03	22.76	1.0858	35 37	1.2759	106 28	0.8951	0.6849
7	-0.03	+22.84	1.0865	35 28	1.2756	105 25	+0.8970	0.6876

FOR WASHINGTON MEAN MIDNIGHT.

CONSTANTS FOR FACILITATING THE REDUCTION OF THE FIXED STARS.

1868.	μ	f	Log g	α	Log h	δ	Log i	τ
Sept. 7	-0.03	+22.84	1.0665	35 28	1.2756	105 25	+0.8970	0.6876
8	0.03	22.91	1.0672	35 19	1.2753	104 22	0.8988	0.6904
9	0.03	22.99	1.0679	35 11	1.2750	103 20	0.9005	0.6931
10	0.03	23.07	1.0686	35 3	1.2747	102 16	0.9020	0.6958
11	0.03	23.15	1.0693	34 55	1.2744	101 13	0.9034	0.6986
12	-0.03	+23.22	1.0901	34 47	1.2742	100 9	+0.9047	0.7013
13	0.03	23.30	1.0908	34 39	1.2740	99 6	0.9069	0.7041
14	0.03	23.37	1.0916	34 32	1.2738	98 3	0.9069	0.7068
15	0.03	23.45	1.0923	34 24	1.2736	96 59	0.9078	0.7095
16	0.03	23.53	1.0931	34 17	1.2735	95 55	0.9086	0.7123
17	-0.03	+23.60	1.0939	34 10	1.2734	94 51	+0.9092	0.7150
18	0.03	23.67	1.0947	34 3	1.2733	93 47	0.9097	0.7177
19	0.03	23.75	1.0955	33 57	1.2732	92 44	0.9101	0.7205
20	0.03	23.82	1.0963	33 50	1.2732	91 40	0.9104	0.7232
21	0.03	23.90	1.0971	33 44	1.2731	90 36	0.9105	0.7260
22	-0.03	+23.97	1.0979	33 38	1.2731	89 32	+0.9105	0.7287
23	0.03	24.04	1.0988	33 32	1.2731	88 27	0.9104	0.7314
24	0.03	24.12	1.0996	33 26	1.2732	87 23	0.9102	0.7342
25	0.03	24.19	1.1005	33 21	1.2733	86 19	0.9098	0.7369
26	0.03	24.27	1.1014	33 15	1.2734	85 15	0.9093	0.7397
27	-0.03	+24.34	1.1023	33 10	1.2735	84 11	+0.9086	0.7424
28	0.03	24.42	1.1032	33 5	1.2737	83 6	0.9079	0.7451
29	0.03	24.49	1.1042	33 0	1.2738	82 2	0.9070	0.7479
30	0.03	24.57	1.1051	32 55	1.2740	80 58	0.9060	0.7506
Oct. 1	0.03	24.65	1.1061	32 50	1.2742	79 54	0.9048	0.7533
2	-0.03	+24.72	1.1070	32 46	1.2744	78 50	+0.9036	0.7561
3	0.03	24.80	1.1080	32 41	1.2747	77 45	0.9021	0.7588
4	0.03	24.88	1.1090	32 37	1.2749	76 42	0.9005	0.7616
5	0.03	24.96	1.1101	32 33	1.2752	75 38	0.8988	0.7643
6	0.03	25.04	1.1111	32 29	1.2756	74 34	0.8990	0.7670
7	-0.03	+25.12	1.1122	32 25	1.2759	73 30	+0.8966	0.7698
8	0.03	25.20	1.1133	32 21	1.2762	72 26	0.8959	0.7725
9	0.03	25.28	1.1144	32 17	1.2766	71 22	0.8907	0.7752
10	0.03	25.36	1.1155	32 13	1.2771	70 19	0.8883	0.7780
11	0.03	25.44	1.1166	32 10	1.2775	69 15	0.8867	0.7807
12	-0.03	+25.53	1.1177	32 6	1.2779	68 11	+0.8836	0.7835
13	0.03	25.61	1.1189	32 2	1.2784	67 8	0.8802	0.7862
14	0.03	25.70	1.1201	31 59	1.2789	66 5	0.8772	0.7889
15	0.03	25.79	1.1213	31 56	1.2794	65 2	0.8741	0.7917
16	0.03	25.87	1.1225	31 52	1.2799	63 59	0.8708	0.7944
17	-0.03	+25.96	1.1238	31 49	1.2804	62 56	+0.8674	0.7971
18	0.03	26.05	1.1250	31 46	1.2809	61 53	0.8638	0.7999
19	0.03	26.14	1.1263	31 43	1.2815	60 50	0.8600	0.8026
20	0.03	26.24	1.1276	31 40	1.2821	59 47	0.8560	0.8054
21	0.03	26.33	1.1289	31 37	1.2826	58 45	0.8519	0.8081
22	-0.03	+26.42	1.1302	31 34	1.2832	57 43	+0.8476	0.8108
23	0.03	26.52	1.1315	31 30	1.2838	56 41	0.8431	0.8136
24	0.03	26.62	1.1329	31 27	1.2843	55 38	0.8384	0.8163
25	0.03	26.71	1.1342	31 24	1.2850	54 36	0.8336	0.8191
26	0.03	26.81	1.1356	31 21	1.2856	53 35	0.8286	0.8218
27	-0.03	+26.92	1.1370	31 18	1.2862	52 33	+0.8234	0.8245

FOR WASHINGTON MEAN MIDNIGHT.

CONSTANTS FOR FACILITATING THE REDUCTION OF THE FIXED STARS.

1868.	μ .	f .	Log g .	g .	Log h .	h .	Log i .	τ .
Oct. 27	-0.03	+26.92	1.1370	31 16	1.2862	52 33	+0.8234	0.8945
28	0.03	27.02	1.1385	31 15	1.2868	51 32	0.8180	0.8273
29	0.03	27.12	1.1399	31 12	1.2875	50 30	0.8123	0.8300
30	0.03	27.23	1.1413	31 9	1.2881	49 29	0.8065	0.8327
31	0.03	27.33	1.1428	31 6	1.2888	48 28	0.8004	0.8355
Nov. 1	-0.03	+27.44	1.1443	31 3	1.2894	47 27	+0.7941	0.8382
2	0.03	27.55	1.1458	31 0	1.2901	46 26	0.7876	0.8410
3	0.03	27.66	1.1473	30 57	1.2908	45 26	0.7809	0.8437
4	0.03	27.78	1.1488	30 53	1.2914	44 25	0.7739	0.8464
5	0.03	27.90	1.1503	30 50	1.2921	43 25	0.7666	0.8492
6	-0.03	+28.01	1.1519	30 47	1.2928	42 25	+0.7591	0.8519
7	0.03	28.12	1.1534	30 43	1.2934	41 25	0.7513	0.8546
8	0.03	28.24	1.1550	30 40	1.2941	40 25	0.7432	0.8574
9	0.03	28.36	1.1566	30 36	1.2947	39 25	0.7349	0.8601
10	0.03	28.48	1.1582	30 33	1.2953	38 26	0.7262	0.8629
11	-0.03	+28.61	1.1598	30 29	1.2960	37 27	+0.7173	0.8656
12	0.03	28.73	1.1614	30 25	1.2966	36 27	0.7080	0.8683
13	0.03	28.86	1.1630	30 21	1.2973	35 28	0.6982	0.8711
14	0.03	28.98	1.1646	30 18	1.2979	34 29	0.6882	0.8738
15	0.03	29.11	1.1662	30 14	1.2985	33 30	0.6778	0.8765
16	-0.03	+29.24	1.1679	30 10	1.2991	32 32	+0.6671	0.8793
17	0.03	29.37	1.1695	30 6	1.2997	31 33	0.6558	0.8820
18	0.03	29.50	1.1712	30 1	1.3002	30 35	0.6441	0.8848
19	0.03	29.64	1.1728	29 57	1.3008	29 37	0.6321	0.8875
20	0.03	29.77	1.1745	29 53	1.3014	28 39	0.6194	0.8902
21	-0.03	+29.91	1.1761	29 48	1.3019	27 41	+0.6063	0.8930
22	0.03	30.05	1.1778	29 43	1.3025	26 43	0.5926	0.8957
23	0.03	30.19	1.1795	29 39	1.3030	25 45	0.5784	0.8985
24	0.03	30.33	1.1811	29 34	1.3035	24 47	0.5634	0.9012
25	0.03	30.47	1.1828	29 29	1.3040	23 50	0.5479	0.9039
26	-0.03	+30.61	1.1845	29 24	1.3045	22 52	+0.5315	0.9066
27	0.03	30.76	1.1862	29 19	1.3050	21 55	0.5144	0.9094
28	0.03	30.90	1.1878	29 14	1.3054	20 58	0.4965	0.9121
29	0.03	31.05	1.1895	29 8	1.3059	20 1	0.4776	0.9149
30	0.03	31.20	1.1912	29 3	1.3063	19 4	0.4577	0.9176
Dec. 1	-0.03	+31.35	1.1929	28 57	1.3067	18 7	+0.4367	0.9204
2	0.03	31.50	1.1945	28 51	1.3071	17 10	0.4145	0.9231
3	0.03	31.65	1.1962	28 46	1.3074	16 13	0.3911	0.9258
4	0.03	31.80	1.1979	28 40	1.3078	15 17	0.3660	0.9286
5	0.03	31.95	1.1995	28 34	1.3081	14 20	0.3393	0.9313
6	-0.03	+32.10	1.2012	28 28	1.3084	13 24	+0.3106	0.9340
7	0.03	32.26	1.2028	28 22	1.3087	12 27	0.2798	0.9368
8	0.03	32.41	1.2045	28 15	1.3090	11 31	0.2466	0.9395
9	0.03	32.57	1.2061	28 9	1.3093	10 34	0.2103	0.9423
10	0.03	32.72	1.2077	28 2	1.3095	9 38	0.1707	0.9450
11	-0.03	+32.88	1.2094	27 56	1.3097	8 42	+0.1267	0.9477
12	0.03	33.03	1.2110	27 49	1.3099	7 46	0.0777	0.9505
13	0.03	33.19	1.2126	27 42	1.3100	6 50	0.0225	0.9532
14	0.03	33.35	1.2142	27 35	1.3102	5 53	9.9588	0.9559
15	0.03	33.50	1.2158	27 29	1.3103	4 57	9.8839	0.9587
16	-0.03	+33.66	1.2174	27 22	1.3104	4 1	+9.7933	0.9614

FOR WASHINGTON MEAN MIDNIGHT.

CONSTANTS FOR FACILITATING THE REDUCTION OF THE FIXED STARS.

1868.	α .	f .	Log g .	g .	Log h .	h .	Log i .	τ .
Dec. 16	-0.03	+33.66	1.2174	27° 23'	1.3104	4 1'	+9.7933	0.9614
17	0.03	33.82	1.2189	27 14	1.3105	3 5	9.6788	0.9642
18	0.03	33.98	1.2205	27 7	1.3105	2 9	9.5222	0.9669
19	0.03	34.14	1.2220	27 0	1.3106	1 13	9.2739	0.9696
20	0.03	34.30	1.2236	26 52	1.3106	0 17	+8.6374	0.9724
21	-0.03	+34.45	1.2251	26 45	1.3106	359 21	-9.0066	0.9751
22	0.03	34.61	1.2266	26 37	1.3106	358 25	9.3910	0.9778
23	0.03	34.77	1.2281	26 30	1.3105	357 29	9.5916	0.9806
24	0.03	34.93	1.2296	26 22	1.3104	356 32	9.7284	0.9833
25	0.03	35.09	1.2311	26 14	1.3103	355 36	9.8322	0.9861
26	-0.03	+35.25	1.2326	26 7	1.3102	354 40	-9.9157	0.9888
27	0.03	35.41	1.2340	25 59	1.3101	353 44	9.9659	0.9915
28	0.03	35.56	1.2355	25 51	1.3100	352 48	0.0458	0.9943
29	0.03	35.72	1.2369	25 43	1.3098	351 51	0.0784	0.9970
30	0.03	35.88	1.2383	25 35	1.3096	350 55	0.1453	0.9998
31	-0.03	+36.03	1.2397	25 27	1.3093	349 58	-0.1875	1.0025
32	-0.03	+36.19	1.2411	25 19	1.3091	349 1	-0.2268	1.0052

BESSEL'S FORMULÆ OF REDUCTION FOR THE FIXED STARS,

WITH DR. PETERS'S COEFFICIENTS, AND BESSEL'S NOTATION.

$$A = \tau - 0.34242 \sin \Omega + 0.00410 \sin 2\Omega - 0.02519 \sin 2\odot + 0.00294 \sin (\odot + 82^\circ 21').$$

$$B = -9'' 2237 \cos \Omega + 0''.0896 \cos 2\Omega - 0''.5507 \cos 2\odot - 0''.0093 \cos (\odot + 280^\circ 40').$$

$$C = -20'' 4451 \cos \omega \cos \odot.$$

$$D = -20'' 4451 \sin \odot.$$

$$E = -0''.0471 \sin \Omega + 0''.0015 \sin 2\Omega - 0''.0034 \sin 2\odot.$$

$$a = 46''.0816 + 20''.0548 \sin \alpha \tan \delta.$$

$$b = \cos \alpha \tan \delta.$$

$$c = \cos \alpha \sec \delta.$$

$$d = \sin \alpha \sec \delta.$$

$$a' = 20''.0548 \cos \alpha.$$

$$b' = -\sin \alpha.$$

$$c' = \tan \omega \cos \delta - \sin \alpha \sin \delta.$$

$$d' = \cos \alpha \sin \delta.$$

μ = the annual proper motion in right ascension.

μ' = the annual proper motion in declination.

τ = the time reckoned from the moment when the sun's mean longitude was 280° (Jan. 1^d — 649) as expressed in fractional parts of a tropical year.

\odot = the sun's true longitude.

Ω = the longitude of the moon's ascending node.

ω = the obliquity of the ecliptic.

α = the star's mean right ascension for the beginning of the year.

δ = the star's mean declination for the beginning of the year.

α' = the star's apparent right ascension at the time τ .

δ' = the star's apparent declination at the time τ .

$$\alpha' - \alpha = A a + B b + C c + D d + E + \tau \mu.$$

$$\delta' - \delta = A a' + B b' + C c' + D d' + \tau \mu'.$$

The following formulæ may also be used by putting

$$f = 46''.0816 A.$$

$$g \cos G = 20''.0548 A.$$

$$g \sin G = B.$$

$$i = C \tan \alpha.$$

$$h \sin H = C.$$

$$h \cos H = D.$$

$$\alpha' - \alpha = E + f + \tau \mu + g \sin (G + \alpha) \tan \delta + h \sin (H + \alpha) \sec \delta.$$

$$\delta' - \delta = \tau \mu' + g \cos (G + \alpha) + h \cos (H + \alpha) \sin \delta + i \cos \delta.$$

MEAN PLACES FOR 1868.0.

Star's Name.	Magnitude.	Right Ascension.			Am. Variation.	Declination.			Am. Variation.
		^h	^m	^s	^s	[°]	[']	["]	["]
21 Cassiopeæ . . .	6	0	36	58.73	+ 3.823	+74	15	55.6	+19.74
POLARIS . . .	2	1	10	36.42	19.801	88	36	20.4	19.11
A Cassiopeæ (38) . . .	6	1	21	26.95	4.347	69	35	1.9	18.72
50 Cassiopeæ . . .	4	1	52	13.03	4.971	71	46	49.0	17.70
ε Cassiopeæ . . .	4	2	18	13.48	4.834	66	48	22.8	16.50
48 Cephei (H.) . . .	6	3	3	40.56	+ 7.332	+77	14	41.2	+13.89
α Camelopardalis (9)	4	4	40	56.62	5.910	66	6	50.0	6.79
Groombridge 966 . . .	6.7	5	22	5.71	7.985	74	56	58.8	+ 3.30
22 Camelopardalis (H.)	5.4	6	4	17.60	6.619	69	21	39.2	— 0.49
51 Cephei (H.) . . .	5	6	37	41.70	30.342	87	14	29.3	3.28
Piazzi vii. 67 . . .	6	7	17	7.23	+ 6.317	+68	43	48.8	— 6.69
3 Ursæ Majoris (H.)	6	7	59	38.48	6.075	68	51	29.9	10.01
♂ Ursæ Majoris . . .	5	8	58	44.40	5.384	67	40	0.9	14.20
1 Draconis (H.) . . .	4.5	9	18	1.98	9.169	81	54	20.8	15.25
24 Ursæ Majoris (d) . .	5.4	9	22	45.51	5.437	70	24	28.0	15.47
39 Ursæ Majoris . . .	6	10	8	24.93	+ 4.445	+65	45	54.4	—17.76
9 Draconis (H.) . . .	5.4	10	23	47.84	5.323	76	23	28.5	18.34
λ Draconis . . .	3.4	11	23	32.07	3.645	70	3	32.1	19.86
4 Draconis (H.) . . .	5.4	12	5	59.01	2.913	78	20	58.1	20.06
κ Draconis . . .	3.4	12	27	50.08	2.603	70	30	57.0	19.93
32 Camelop. (H.) (foli.)	5.4	12	48	11.31	+ 0.345	+84	7	48.4	—19.63
α Draconis . . .	3.4	14	0	49.02	+ 1.623	65	0	25.1	17.37
5 Ursæ Minoris . . .	5.4	14	27	50.26	— 0.216	76	16	56.7	16.04
β Ursæ Minoris . . .	2	14	51	7.14	0.253	74	41	40.6	14.75
γ Ursæ Minoris . . .	3	15	20	57.52	0.150	72	18	13.7	12.80
ζ Ursæ Minoris . . .	4.5	15	48	49.94	— 2.295	+78	11	57.0	—10.86
Groombridge 2320 . . .	6.5	16	5	58.20	+ 0.131	68	9	29.0	9.50
15 Draconis (A.) . . .	5	16	28	15.24	— 0.144	69	3	13.2	7.78
ε Ursæ Minoris . . .	4.5	16	59	35.61	6.398	82	14	59.5	5.22
α Draconis . . .	5	17	37	43.61	0.356	68	49	5.5	1.65
ψ ¹ Draconis (pr.) . . .	4.5	17	44	17.46	— 1.084	+72	12	46.3	— 1.63
δ Ursæ Minoris . . .	4.5	18	14	55.24	19.388	86	36	17.6	+ 1.32
50 Draconis . . .	6	18	50	36.91	— 1.896	75	16	35.4	4.45
δ Draconis . . .	3	19	12	31.04	+ 0.035	67	25	45.2	6.31
τ Draconis . . .	5	19	18	4.46	— 1.104	73	6	33.8	6.80
ε Draconis . . .	4	19	48	36.30	— 0.170	+69	55	52.9	+ 9.15
λ Ursæ Minoris (B.) . .	6.7	19	56	14.48	58.558	88	54	45.1	9.76
κ Cephei . . .	4.5	20	13	16.89	1.888	77	18	44.1	11.02
Groombridge 3241 . . .	6.7	20	30	33.12	0.211	72	5	3.8	12.23
12 Year Cat. 1879 . . .	6	20	53	29.01	— 2.483	80	3	19.5	13.72
β Cephei . . .	3	21	26	56.76	+ 0.801	+69	58	52.7	+15.71
11 Cephei . . .	5	21	39	58.73	0.908	70	42	13.5	16.50
79 Draconis . . .	6.7	21	51	13.49	0.739	73	4	40.5	16.96
226 Cephei (B.) . . .	5.6	22	29	56.76	1.085	75	32	46.3	18.52
ε Cephei . . .	4.3	22	44	59.17	2.117	65	30	23.4	18.85
ο Cephei . . .	6.5	23	13	12.99	+ 2.435	+67	23	21.3	+19.62
γ Cephei . . .	3.4	23	33	57.00	2.400	76	53	44.6	20.07
Groombridge 4163 . . .	7	23	48	26.38	2.846	+73	40	32.3	20.00
β Hydri . . .	3	0	18	46.37	3.282	—77	59	54.9	+20.25
α Chamæleonis . . .	5	12	10	39.27	3.385	78	34	45.9	—20.04
α Trianguli Australis	2	16	34	43.00	6.280	68	46	49.4	— 7.37
ο Octantis . . .	6	18	2	44.52	+109.869	—89	16	43.0	+ 0.32

MEAN PLACES FOR 1868.0.

Star's Name.	Magnitude.	Right Ascension.	An. Variation.	Declination.	An. Variation.
α Andromedæ	2	^h 0 ^m 1 34.12	+ 3.087	+28° 21' 42.6	+19.91
γ Pegasi (<i>Algenib</i>)	3.2	0 6 26.45	3.082	+14 26 58.8	20.04
α Cassiopeæ	var.	0 33 1.96	3.362	+55 48 46.9	19.81
β Ceti	2	0 36 57.71	3.014	-18 42 42.6	19.81
ϵ Piscium	4	0 56 5.72	3.109	+ 7 10 43.4	19.46
δ Ceti	3	1 17 25.55	2.998	- 8 51 55.5	+18.70
η Piscium	4.3	1 24 25.33	3.199	+14 39 51.6	18.71
α Eridani (<i>Achernar</i>)	1	1 32 47.56	2.235	-57 54 28.4	18.42
α Piscium	4	1 38 25.59	3.161	+ 8 29 32.0	18.24
β Arietis	3.2	1 47 21.13	3.300	+20 9 41.7	17.78
α Arietis	2	1 59 44.22	3.367	+22 50 13.2	+17.24
65 Ceti (ϵ^1)	4.5	2 6 0.33	3.169	+ 8 13 34.3	17.06
γ Ceti	3.4	2 36 27.78	3.102	+ 2 40 39.1	15.37
α Ceti	2.3	2 55 22.88	3.128	+ 3 34 12.0	14.36
ζ Arietis	4.5	3 7 19.09	3.436	+20 33 12.1	13.65
α Persei	2	3 14 54.66	4.246	+49 23 18.8	+13.19
δ Persei	3	3 33 32.10	4.238	+47 21 45.1	11.91
η Tauri	3	3 39 38.49	3.553	+23 41 40.3	11.47
ζ Persei	3	3 45 50.36	3.755	+31 29 20.3	11.03
γ Eridani	3	3 51 52.29	2.796	-13 53 9.9	10.52
γ Tauri	4	4 12 17.02	3.407	+15 18 22.7	+ 9.05
ϵ Tauri	4.3	4 20 54.67	3.495	+18 53 5.7	8.37
α Tauri (<i>Aldebaran</i>)	1	4 28 20.92	3.435	+16 14 29.7	7.64
ϵ Aurigæ	3	4 48 24.03	3.896	+32 57 14.4	6.14
11 Orionis	5	4 57 1.72	3.425	+15 13 3.5	5.41
α Aurigæ (<i>Capella</i>)	1	5 6 56.49	4.422	+45 51 37.1	+ 4.18
β Orionis (<i>Rigel</i>)	1	5 8 11.70	2.881	- 8 21 23.5	4.48
β Tauri	2	5 17 56.94	3.787	+28 29 33.8	3.47
δ Orionis	2	5 25 15.85	3.064	- 0 23 56.6	2.99
α Leporis	3	5 26 54.59	2.646	-17 55 8.3	2.89
ϵ Orionis	2	5 29 30.97	3.042	- 1 17 19.8	+ 2.65
α Columbæ	2	5 34 52.27	2.173	-34 8 44.5	2.19
α Orionis	var.	5 48 1.58	3.247	+ 7 22 46.8	+ 1.05
μ Geminorum	3	6 14 58.50	3.633	+22 34 41.4	- 1.45
α Argus (<i>Canopus</i>)	1	6 21 1.42	1.330	-52 37 28.4	1.84
γ Geminorum	2.3	6 30 5.18	3.469	+16 30 33.0	- 2.67
α Canis Maj. (<i>Sirius</i>)	1	6 39 19.84	2.645	-16 32 13.1	4.63
ϵ Canis Majoris	2.1	6 53 26.37	2.359	-28 47 41.0	4.65
δ Canis Majoris	2	7 3 1.52	2.440	-26 11 7.3	5.44
δ Geminorum	3.4	7 12 14.30	3.591	+22 13 21.0	6.24
α Geminor. (<i>Castor</i>)	2.1	7 26 10.17	3.840	+32 10 30.1	- 7.44
α Can. Min. (<i>Procyon</i>)	1	7 32 23.54	3.147	+ 5 33 39.4	8.91
β Geminor. (<i>Pollux</i>)	1.2	7 37 14.14	3.682	+28 20 32.5	8.32
ϕ Geminorum	5	7 45 24.99	3.685	+27 6 16.2	8.95
15 Argus (ϵ)	3	8 1 55.43	2.556	-23 55 32.0	10.11
ϵ Hydræ	3.4	8 39 47.09	3.185	+ 6 54 4.5	-12.92
ϵ Ursæ Majoris	3	8 50 9.44	4.143	+48 33 27.3	13.84
α Cancr.	5	9 0 35.72	3.256	+11 11 51.0	14.23
ϵ Argus	2	9 13 33.34	+ 1.602	-58 43 17.2	-14.92

MEAN PLACES FOR 1868.0

Star's Name.	Magnitude.	Right Ascension.	An. Variation.	Declination.	An. Variation.
α Hydræ	2	^h 9 ^m 21 ^s 6.06	+ 2.950	— 8° 5' 15.9"	—15.39
θ Ursæ Majoris . . .	3	9 24 0.73	4.053	+52 16 36.8	16.16
ϵ Leonis	3	9 38 21.28	3.421	+24 22 49.8	16.36
μ Leonis	4	9 45 15.04	3.425	+26 37 38.0	16.75
α Leonis (<i>Regulus</i>) .	1.2	10 1 20.43	3.204	+12 36 40.6	17.42
γ^1 Leonis	2	10 12 41.49	3.318	+20 30 28.7	—18.05
ρ Leonis	4	10 25 51.59	3.167	+ 9 59 5.0	18.42
η Argus	2	10 39 56.74	2.309	—58 59 25.3	18.75
ι Leonis	5	10 42 18.98	3.160	+11 14 34.0	18.93
α Ursæ Majoris . . .	2	10 55 33.50	3.764	+62 27 45.9	19.36
δ Leonis	2.3	11 7 5.15	3.203	+21 14 47.0	—19.66
δ Crateris	3.4	11 12 44.59	2.996	—14 3 53.3	19.45
τ Leonis	5	11 21 8.94	3.088	+ 3 34 58.4	19.79
η^1 Leonis (ν)	5.4	11 30 11.46	3.072	— 0 5 42.8	19.86
β Leonis	2	11 42 19.51	3.066	+15 18 36.1	20.10
γ Ursæ Majoris . . .	2.3	11 46 52.53	3.191	+54 25 43.0	—20.03
\circ Virginis	4	11 58 29.15	3.061	+ 9 27 57.7	20.03
η Virginis	3.4	12 13 9.21	3.068	+ 0 4 1.2	20.05
α^1 Crucis	1	12 19 16.18	3.264	—62 21 58.3	19.93
β Corvi	2.3	12 27 27.38	3.135	—22 39 59.9	19.98
12 Canum Venaticorum	3	12 49 50.96	2.818	+39 1 54.7	—19.52
θ Virginis	4.5	13 3 7.08	3.100	— 4 50 0.9	19.34
α Virginis (<i>Spica</i>) .	1	13 18 14.53	3.153	—10 28 16.8	18.93
ζ Virginis	3.4	13 27 58.13	3.053	+ 0 4 48.2	18.54
η Ursæ Majoris . . .	2	13 42 20.24	2.375	+49 58 22.9	18.11
η Bootis	3	13 48 24.01	2.859	+19 3 37.5	—18.21
β Centauri	1	13 54 31.94	4.160	—59 44 4.3	17.67
α Bootis (<i>Arcturus</i>) .	1	14 9 38.47	2.734	+19 52 16.2	18.90
θ Bootis	4.3	14 20 42.14	2.043	+52 27 42.2	16.80
α^2 Centauri	1	14 30 40.23	4.033	—60 17 9.2	15.04
ϵ Bootis	2.3	14 39 13.36	2.622	+27 37 55.3	—15.40
α^1 Libræ	2.3	14 43 34.79	3.306	—15 29 28.3	15.22
β Bootis	3	14 56 58.43	2.260	+40 54 44.3	14.43
β Libræ	2	15 9 54.40	3.220	— 8 53 37.9	13.57
μ^1 Bootis	4.3	15 19 30.29	2.268	+37 50 29.5	12.83
α Coronæ Borealis .	2	15 29 5.98	2.539	+27 9 39.5	—12.33
α Serpentis	2.3	15 37 46.04	2.950	+ 6 50 35.2	11.60
ϵ Serpentis	3.4	15 44 14.27	2.987	+ 4 52 37.4	11.13
ϵ Coronæ Borealis .	4	15 52 7.47	2.485	+27 15 42.6	10.67
δ Scorpïi	2.3	15 52 31.92	3.536	—22 14 36.3	10.60
β^1 Scorpïi	2	15 57 45.84	3.477	—19 26 29.8	—10.22
δ Ophiuchi	3	16 7 25.79	3.137	— 3 21 8.0	9.59
τ Herculis	3.4	16 15 46.33	1.798	+46 37 44.3	8.78
α Scorpïi (<i>Antares</i>) .	1.2	16 21 19.07	3.668	—26 8 9.7	8.39
η Draconis	3.2	16 22 13.13	0.823	+61 48 49.4	8.22
ζ Ophiuchi	3.2	16 29 53.56	3.298	—10 17 49.7	— 7.65
η Herculis	3	16 38 22.28	2.054	+39 10 29.9	7.06
κ Ophiuchi	3.4	16 51 25.24	2.835	+ 9 34 56.8	5.89
d Herculis	5	16 56 43.86	+ 2.209	+33 45 40.5	— 5.44

MEAN PLACES FOR 1868.0.

Star's Name.	Magnitude.	Right Ascension.	An. Variation.	Declination.	An. Variation.
		h m s	s	° ' "	
α Herculis	var.	17 8 37.75	+ 2.733	+14° 32' 35."6	— 4.41
δ Ophiuchi (44) . . .	5	17 18 18.63	3.659	—24 3 3.1	3.75
β Draconis	3.2	17 27 27.00	1.351	+52 24 0.3	2.84
α Ophiuchi	2	17 28 48.44	2.782	+12 39 31.2	2.92
μ Herculis	3.4	17 41 17.60	2.345	+27 47 58.6	2.38
γ Draconis	2.3	17 53 32.62	1.394	+51 30 19.6	— 0.60
γ^2 Sagittarii	3.4	17 57 19.76	3.852	—30 25 21.6	— 0.46
μ^1 Sagittarii	4	18 5 52.17	3.586	—21 5 25.8	+ 0.50
η Serpentis	3	18 14 28.75	3.099	— 2 55 50.5	0.59
1 Aquilæ (3 H. Scuti)	4.5	18 28 1.38	3.264	— 8 20 2.3	2.12
α Lyrae (<i>Vega</i>) . . .	1	18 32 28.15	2.032	+38 39 45.1	+ 3.12
β Lyrae	var.	18 45 12.38	2.214	+33 12 39.3	3.90
σ Sagittarii	2.3	18 47 4.77	3.724	—26 27 27.0	4.01
ζ Aquilæ	3	18 59 20.52	2.755	+13 40 10.5	5.06
d Sagittarii	5	19 9 54.67	3.515	—19 11 7.1	6.03
δ Aquilæ	3.4	19 18 50.51	3.025	+ 2 51 14.2	+ 6.86
κ Aquilæ	5	19 29 47.31	3.231	— 7 19 6.7	7.66
γ Aquilæ	3	19 39 59.03	2.853	+10 17 37.6	8.48
α Aquilæ (<i>Altair</i>) . .	1.2	19 44 20.53	2.928	+ 8 31 19.0	9.20
β Aquilæ	4	19 48 49.72	2.947	+ 6 4 45.0	8.69
τ Aquilæ	6.5	19 57 41.54	2.935	+ 6 54 26.7	+ 9.86
α^2 Capricorni	3.4	20 10 43.70	3.334	—12 57 6.0	10.84
α Pavonis	2	20 15 11.59	4.797	—57 9 15.9	11.12
π Capricorni	5	20 19 45.78	3.442	—18 38 31.1	11.51
ϵ Delphini	4	20 26 54.36	2.866	+10 51 22.8	11.99
α Cygni	2.1	20 36 55.93	2.044	+44 48 35.6	+12.69
μ Aquarii	5.4	20 45 31.89	3.241	— 9 28 35.9	13.22
ν Cygni	4	20 52 15.15	2.234	+40 39 36.9	13.70
61 ¹ Cygni	5.6	21 0 58.60	2.673	+38 6 5.8	17.46
ζ Cygni	3	21 7 19.13	2.550	+29 41 12.1	14.56
α Cephei	3.2	21 15 25.64	1.438	+62 1 35.8	+15.11
1 Pegasi	4.5	21 15 59.00	2.775	+19 14 29.4	15.23
β Aquarii	3	21 24 36.50	3.165	— 6 9 1.3	15.62
ξ Aquarii	5.4	21 30 43.37	3.199	— 8 26 41.0	15.91
ϵ Pegasi	2.3	21 37 42.18	2.948	+ 9 16 16.0	16.31
μ Capricorni	5	21 46 5.86	3.281	—14 10 18.3	+16.75
α Aquarii	3	21 59 0.19	3.084	— 0 57 35.5	17.32
α Gruis	2	21 59 54.12	3.816	—47 35 54.4	17.18
θ Aquarii	4.5	22 9 52.00	3.171	— 8 26 22.0	17.75
π Aquarii	5.4	22 18 32.11	3.065	+ 0 42 30.1	18.11
η Aquarii	4.3	22 28 34.35	3.084	— 0 47 49.1	+18.42
ζ Pegasi	3.4	22 34 52.70	2.988	+10 8 35.4	18.69
λ Aquarii	4	22 45 43.53	3.131	— 8 16 52.8	19.04
α Pis.Aus. (<i>Fomalhaut</i>)	1.2	22 50 21.07	3.330	—30 19 15.8	18.97
α Pegasi (<i>Markab</i>) . .	2	22 58 11.21	2.984	+14 29 45.4	19.32
θ Piscium	4.5	23 21 16.34	3.041	+ 5 39 14.5	+19.71
ϵ Piscium	4.5	23 33 9.74	3.085	+ 4 54 39.6	19.47
ω Piscium	4	23 52 32.05	+ 3.078	+ 6 7 56.7	+19.91

APPARENT PLACES OF α URSÆ MINORIS, (*Polaris*), FOR THE UPPER TRANSIT
AT WASHINGTON.

Mean Solar Date.	JANUARY.		Mean Solar Date.	FEBRUARY.		Mean Solar Date.	MARCH.		Mean Solar Date.	APRIL.	
	Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.
	^h 1 10	^m 88° 36'		^h 1 10	^m 88° 36'		^h 1 10	^m 88° 36'		^h 1 10	^m 88° 36'
1.3	65.15	35.6	1.2	37.78	35.3	1.1	16.95	30.0	1.0	7.16	21.0
2.3	64.27	35.6	2.2	37.05	35.2	2.1	16.46	29.8	2.0	7.03	20.7
3.3	63.45	35.7	3.2	36.29	35.1	3.1	15.95	29.6	3.0	6.88	20.4
4.3	62.66	35.7	4.2	35.50	35.0	4.1	15.41	29.3	4.0	6.74	20.1
5.3	61.90	35.8	5.2	34.69	35.0	5.1	14.84	29.1	5.0	6.66	19.7
6.3	61.11	35.9	6.2	33.82	34.9	6.1	14.26	28.8	6.0	6.64	19.4
7.2	60.30	36.0	7.2	32.91	34.8	7.1	13.66	28.6	7.0	6.68	19.0
8.2	59.44	36.1	8.2	32.00	34.6	8.1	13.11	28.3	8.0	6.79	18.7
9.2	58.54	36.2	9.2	31.08	34.5	9.1	12.60	28.0	9.0	6.94	18.3
10.2	57.57	36.2	10.2	30.20	34.3	10.1	12.14	27.6	10.0	7.14	18.0
11.2	56.58	36.3	11.2	29.38	34.1	11.1	11.76	27.3	11.0	7.33	17.7
12.2	55.55	36.3	12.2	28.61	33.9	12.1	11.43	27.0	12.0	7.52	17.4
13.2	54.55	36.3	13.1	27.90	33.7	13.1	11.15	26.7	13.0	7.68	17.1
14.2	53.56	36.3	14.1	27.23	33.5	14.1	10.90	26.4	14.0	7.82	16.9
15.2	52.63	36.3	15.1	26.60	33.3	15.1	10.64	26.1	15.0	7.91	16.6
16.2	51.74	36.3	16.1	25.98	33.1	16.1	10.36	25.9	16.0	7.99	16.3
17.2	50.91	36.2	17.1	25.35	33.0	17.1	10.06	25.6	17.0	8.08	16.0
18.2	50.10	36.2	18.1	24.67	32.8	18.1	9.70	25.3	18.0	8.19	15.7
19.2	49.32	36.2	19.1	23.96	32.6	19.1	9.33	25.1	19.0	8.35	15.4
20.2	48.51	36.2	20.1	23.19	32.5	20.1	8.96	24.8	20.0	8.57	15.0
21.2	47.68	36.2	21.1	22.43	32.3	21.1	8.59	24.5	21.0	8.86	14.7
22.2	46.82	36.2	22.1	21.65	32.1	22.0	8.25	24.1	22.0	9.21	14.4
23.2	45.90	36.2	23.1	20.89	31.8	23.0	7.98	23.8	23.0	9.60	14.1
24.2	44.93	36.1	24.1	20.18	31.6	24.0	7.78	23.4	24.0	10.02	13.8
25.2	43.94	36.1	25.1	19.52	31.3	25.0	7.64	23.1	25.0	10.43	13.5
26.2	42.94	36.0	26.1	18.93	31.0	26.0	7.53	22.7	25.9	10.83	13.3
27.2	41.97	35.9	27.1	18.40	30.8	27.0	7.49	22.4	26.9	11.20	13.0
28.2	41.03	35.8	28.1	17.89	30.5	28.0	7.46	22.1	27.9	11.53	12.8
29.2	40.14	35.7	29.1	17.42	30.2	29.0	7.43	21.8	28.9	11.84	12.6
30.2	39.31	35.6	30.1	16.95	30.0	30.0	7.38	21.5	29.9	12.14	12.3
31.2	38.53	35.4	31.1	16.46	29.8	31.0	7.29	21.3	30.9	12.43	12.0
32.2	37.78	35.3	32.1	15.95	29.6	32.0	7.16	21.0	31.9	12.76	11.7

APPARENT PLACES OF α URSÆ MINORIS, (*Polaris*), FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	MAY.		Mean Solar Date.	JUNE.		Mean Solar Date.	JULY.		Mean Solar Date.	AUGUST.	
	Right Ascension.	Declination North.		Right Ascension.	Declination North.		Right Ascension.	Declination North.		Right Ascension.	Declination North.
	^h ^m 1 10	[°] ['] 88 36		^h ^m 1 10	[°] ['] 88 36		^h ^m 1 10	[°] ['] 88 36		^h ^m 1 11	[°] ['] 88 36
1.9	12.76	11.7	1.9	31.87	5.4	1.8	57.39	4.1	1.7	23.93	7.7
2.9	13.15	11.5	2.8	32.73	5.2	2.8	58.36	4.1	2.7	24.65	7.9
3.9	13.59	11.2	3.8	33.62	5.1	3.8	59.27	4.1	3.7	25.34	8.1
4.9	14.09	10.9	4.8	34.49	5.0	4.8	60.15	4.1	4.7	26.01	8.3
5.9	14.64	10.6	5.8	35.35	4.9	5.8	60.96	4.2	5.7	26.69	8.5
6.9	15.23	10.3	6.8	36.19	4.9	6.8	61.76	4.3	6.7	27.41	8.7
7.9	15.87	10.1	7.8	36.97	4.8	7.8	62.53	4.4	7.7	28.17	8.9
8.9	16.47	9.9	8.8	37.70	4.7	8.7	63.30	4.5	8.7	28.98	9.1
9.9	17.05	9.7	9.8	38.42	4.7	9.7	64.10	4.5	9.7	29.80	9.3
10.9	17.60	9.5	10.8	39.12	4.6	10.7	64.94	4.5	10.7	30.66	9.5
11.9	18.10	9.3	11.8	39.85	4.5	11.7	65.83	4.6	11.7	31.50	9.7
12.9	18.59	9.1	12.8	40.61	4.4	12.7	66.77	4.6	12.7	32.31	10.0
13.9	19.06	8.9	13.8	41.42	4.3	13.7	67.73	4.7	13.7	33.07	10.3
14.9	19.53	8.6	14.8	42.30	4.2	14.7	68.72	4.8	14.6	33.78	10.6
15.9	20.05	8.4	15.8	43.22	4.1	15.7	69.69	4.9	15.6	34.43	10.8
16.9	20.62	8.2	16.8	44.17	4.0	16.7	70.62	5.1	16.6	35.05	11.1
17.9	21.25	7.9	17.8	45.15	4.0	17.7	71.51	5.2	17.6	35.63	11.4
18.9	21.95	7.7	18.8	46.10	4.0	18.7	72.35	5.4	18.6	36.19	11.6
19.9	22.69	7.5	19.8	47.01	4.0	19.7	73.13	5.5	19.6	36.78	11.9
20.9	23.47	7.3	20.8	47.89	4.0	20.7	73.89	5.7	20.6	37.40	12.1
21.9	24.24	7.1	21.8	48.70	4.0	21.7	74.61	5.8	21.6	38.07	12.4
22.9	24.99	6.9	22.8	49.48	4.0	22.7	75.36	6.0	22.6	38.78	12.6
23.9	25.71	6.8	23.8	50.25	4.0	23.7	76.13	6.1	23.6	39.50	12.9
24.9	26.39	6.7	24.8	51.00	4.0	24.7	76.95	6.2	24.6	40.25	13.2
25.9	27.02	6.5	25.8	51.79	3.9	25.7	77.82	6.3	25.6	40.98	13.5
26.9	27.64	6.4	26.8	52.63	3.9	26.7	78.72	6.5	26.6	41.68	13.8
27.9	28.25	6.2	27.8	53.51	3.9	27.7	79.64	6.6	27.6	42.31	14.1
28.9	28.89	6.1	28.8	54.44	4.0	28.7	80.58	6.8	28.6	42.88	14.5
29.9	29.55	5.9	29.8	55.41	4.0	29.7	81.48	7.0	29.6	43.39	14.8
30.9	30.27	5.7	30.8	56.40	4.0	30.7	82.35	7.2	30.6	43.86	15.1
31.9	31.04	5.5	31.8	57.39	4.1	31.7	83.18	7.5	31.6	44.32	15.4
32.9	31.87	5.4	32.8	58.36	4.1	32.7	83.93	7.7	32.6	44.77	15.7

APPARENT PLACES OF α URSE MINORIS, (*Polaris*), FOR THE UPPER TRANSIT
AT WASHINGTON.

Mean Solar Date.	SEPTEMBER.		Mean Solar Date.	OCTOBER.		Mean Solar Date.	NOVEMBER.		Mean Solar Date.	DECEMBER.	
	Right Ascension.	Declination North.		Right Ascension.	Declination North.		Right Ascension.	Declination North.		Right Ascension.	Declination North.
	^h 1	^m 11		^h 1	^m 11		^h 1	^m 11		^h 1	^m 11
		88° 36'			88° 36'			88° 36'			88° 36'
1.6	44.77	15.7	1.5	56.00	26.2	1.4	55.76	37.8	1.3	42.75	47.6
2.6	45.24	16.0	2.5	56.24	26.5	2.4	55.61	38.2	2.3	42.09	47.9
3.6	45.74	16.3	3.5	56.50	26.9	3.4	55.41	38.6	3.3	41.36	48.1
4.6	46.29	16.6	4.5	56.78	27.3	4.4	55.16	39.0	4.3	40.61	48.4
5.6	46.88	16.9	5.5	57.04	27.6	5.4	54.83	39.4	5.3	39.82	48.7
6.6	47.48	17.2	6.5	57.26	28.0	6.4	54.44	39.8	6.3	39.05	48.9
7.6	48.09	17.5	7.5	57.42	28.5	7.4	54.03	40.1	7.3	38.29	49.1
8.6	48.66	17.9	8.5	57.52	28.9	8.4	53.58	40.5	8.3	37.56	49.3
9.6	49.20	18.3	9.5	57.54	29.3	9.4	53.15	40.8	9.3	36.88	49.5
10.6	49.67	18.6	10.5	57.53	29.7	10.4	52.76	41.1	10.3	36.23	49.7
11.6	50.07	19.0	11.5	57.48	30.1	11.4	52.39	41.4	11.3	35.60	49.9
12.6	50.42	19.4	12.5	57.43	30.4	12.4	52.06	41.7	12.3	34.98	50.1
13.6	50.74	19.7	13.5	57.39	30.8	13.4	51.76	42.0	13.3	34.32	50.4
14.6	51.03	20.1	14.5	57.39	31.1	14.4	51.46	42.3	14.3	33.61	50.6
15.6	51.35	20.4	15.5	57.42	31.5	15.4	51.15	42.7	15.3	32.86	50.8
16.6	51.69	20.7	16.5	57.49	31.8	16.4	50.81	43.0	16.3	32.03	51.1
17.6	52.05	21.1	17.5	57.57	32.2	17.4	50.39	43.4	17.3	31.16	51.3
18.6	52.45	21.4	18.5	57.66	32.6	18.4	49.92	43.7	18.3	30.26	51.5
19.6	52.88	21.7	19.5	57.70	33.0	19.4	49.36	44.1	19.3	29.35	51.7
20.5	53.32	22.1	20.5	57.71	33.4	20.4	48.79	44.4	20.3	28.44	51.8
21.5	53.78	22.4	21.5	57.67	33.8	21.4	48.17	44.7	21.3	27.57	51.9
22.5	54.17	22.8	22.5	57.55	34.2	22.4	47.54	45.1	22.3	26.74	52.1
23.5	54.52	23.2	23.5	57.37	34.6	23.4	46.93	45.3	23.3	25.95	52.2
24.5	54.82	23.6	24.5	57.15	35.0	24.4	46.36	45.6	24.3	25.18	52.3
25.5	55.04	24.0	25.5	56.89	35.4	25.4	45.83	45.8	25.3	24.45	52.4
26.5	55.23	24.4	26.4	56.66	35.7	26.4	45.33	46.1	26.3	23.71	52.6
27.5	55.37	24.8	27.4	56.44	36.1	27.4	44.84	46.4	27.3	22.94	52.7
28.5	55.49	25.2	28.4	56.25	36.4	28.4	44.38	46.6	28.3	22.12	52.9
29.5	55.63	25.5	29.4	56.10	36.7	29.4	43.88	46.9	29.3	21.25	53.0
30.5	55.80	25.9	30.4	55.98	37.1	30.4	43.34	47.2	30.3	20.32	53.2
31.5	56.00	26.2	31.4	55.87	37.4	31.3	42.75	47.6	31.3	19.37	53.3
32.5	56.24	26.5	32.4	55.76	37.8	32.3	42.09	47.9	32.3	18.38	53.4

APPARENT PLACES OF ϵ URSAE MINORIS, FOR THE UPPER TRANSIT
AT WASHINGTON.

Mean Solar Date.	JANUARY.		Mean Solar Date.	FEBRUARY.		Mean Solar Date.	MARCH.		Mean Solar Date.	APRIL.	
	Right Ascension.	Declination North.		Right Ascension.	Declination North.		Right Ascension.	Declination North.		Right Ascension.	Declination North.
	^h ^m 16 59	[°] ['] 82 14		^h ^m 16 59	[°] ['] 82 14		^h ^m 16 59	[°] ['] 82 14		^h ^m 16 59	[°] ['] 82 14
0.9	^s 26.09	["] 60.2	1.8	^s 29.23	["] 51.2	1.8	^s 33.69	["] 47.4	1.7	^s 38.59	["] 49.2
1.9	26.16	59.9	2.8	29.35	50.9	2.8	33.85	47.3	2.7	38.73	49.3
2.9	26.22	59.6	3.8	29.48	50.7	3.8	34.00	47.3	3.7	38.88	49.5
3.9	26.28	59.3	4.8	29.61	50.5	4.8	34.17	47.2	4.7	39.03	49.6
4.9	26.34	59.0	5.8	29.74	50.3	5.8	34.33	47.2	5.7	39.18	49.8
5.9	26.40	58.7	6.8	29.88	50.1	6.7	34.51	47.1	6.7	39.33	50.0
6.9	26.45	58.4	7.8	30.03	49.8	7.7	34.68	47.1	7.7	39.47	50.2
7.9	26.51	58.1	8.8	30.19	49.6	8.7	34.86	47.1	8.7	39.60	50.5
8.9	26.58	57.7	9.8	30.35	49.4	9.7	35.04	47.1	9.7	39.72	50.7
9.9	26.66	57.4	10.8	30.51	49.3	10.7	35.21	47.2	10.7	39.85	50.9
10.9	26.74	57.0	11.8	30.67	49.1	11.7	35.38	47.2	11.7	39.95	51.1
11.9	26.83	56.7	12.8	30.83	49.0	12.7	35.54	47.3	12.7	40.06	51.3
12.9	26.93	56.3	13.8	30.98	48.9	13.7	35.70	47.4	13.6	40.18	51.5
13.9	27.03	56.0	14.8	31.13	48.8	14.7	35.85	47.4	14.6	40.29	51.7
14.9	27.14	55.7	15.8	31.28	48.7	15.7	36.00	47.5	15.6	40.41	51.9
15.9	27.24	55.4	16.8	31.42	48.6	16.7	36.15	47.6	16.6	40.53	52.1
16.9	27.34	55.2	17.8	31.57	48.4	17.7	36.30	47.6	17.6	40.65	52.3
17.9	27.44	54.9	18.8	31.72	48.3	18.7	36.46	47.6	18.6	40.78	52.5
18.9	27.54	54.7	19.8	31.87	48.1	19.7	36.62	47.7	19.6	40.90	52.8
19.9	27.63	54.4	20.8	32.03	48.0	20.7	36.79	47.7	20.6	41.01	53.0
20.9	27.73	54.1	21.8	32.20	47.9	21.7	36.96	47.8	21.6	41.12	53.3
21.9	27.83	53.9	22.8	32.37	47.7	22.7	37.13	47.9	22.6	41.22	53.6
22.9	27.93	53.6	23.8	32.55	47.6	23.7	37.29	48.0	23.6	41.31	53.9
23.9	28.04	53.3	24.8	32.72	47.6	24.7	37.46	48.1	24.6	41.40	54.2
24.9	28.16	53.0	25.8	32.89	47.5	25.7	37.61	48.3	25.6	41.48	54.5
25.9	28.29	52.7	26.8	33.06	47.5	26.7	37.76	48.4	26.6	41.56	54.7
26.9	28.43	52.4	27.8	33.23	47.5	27.7	37.90	48.6	27.6	41.64	55.0
27.9	28.56	52.1	28.8	33.39	47.4	28.7	38.03	48.7	28.6	41.72	55.2
28.8	28.70	51.9	29.8	33.54	47.4	29.7	38.17	48.9	29.6	41.81	55.4
29.8	28.84	51.7	30.8	33.69	47.4	30.7	38.30	49.0	30.6	41.90	55.7
30.8	28.97	51.5	31.8	33.85	47.3	31.7	38.44	49.1	31.6	41.99	55.9
31.8	29.10	51.3	32.8	34.00	47.3	32.7	38.59	49.2	32.6	42.08	56.2

APPARENT PLACES OF ϵ URSÆ MINORIS, FOR THE UPPER TRANSIT
AT WASHINGTON.

Mean Solar Date.	MAY.		Mean Solar Date.	JUNE.		Mean Solar Date.	JULY.		Mean Solar Date.	AUGUST.	
	Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.
	^h 16 ^m 59	[°] 82 ['] 14		^h 16 ^m 59	[°] 82 ['] 15		^h 16 ^m 59	[°] 82 ['] 15		^h 16 ^m 59	[°] 82 ['] 15
1.6	41.99	55.9	1.5	43.12	5.6	1.4	41.63	14.7	1.3	37.85	21.3
2.6	42.08	56.2	2.5	43.11	6.0	2.4	41.53	15.0	2.3	37.70	21.4
3.6	42.17	56.5	3.5	43.09	6.3	3.4	41.43	15.2	3.3	37.55	21.5
4.6	42.25	56.8	4.5	43.07	6.7	4.4	41.32	15.5	4.3	37.41	21.6
5.6	42.32	57.2	5.5	43.03	7.0	5.4	41.22	15.7	5.3	37.27	21.7
6.6	42.38	57.5	6.5	43.00	7.3	6.4	41.12	15.9	6.3	37.12	21.8
7.6	42.43	57.8	7.5	42.97	7.6	7.4	41.03	16.1	7.3	36.98	22.0
8.6	42.48	58.1	8.5	42.94	7.9	8.4	40.93	16.3	8.3	36.83	22.1
9.6	42.53	58.5	9.5	42.91	8.1	9.4	40.84	16.6	9.3	36.66	22.3
10.6	42.57	58.7	10.5	42.89	8.4	10.4	40.75	16.8	10.3	36.50	22.4
11.6	42.62	59.0	11.5	42.86	8.7	11.4	40.65	17.1	11.3	36.33	22.6
12.6	42.68	59.3	12.5	42.84	9.0	12.4	40.54	17.3	12.3	36.16	22.7
13.6	42.72	59.6	13.5	42.81	9.3	13.4	40.43	17.6	13.3	35.98	22.8
14.6	42.77	59.8	14.5	42.77	9.7	14.4	40.30	17.9	14.3	35.80	22.8
15.6	42.83	60.1	15.5	42.73	10.0	15.4	40.17	18.1	15.3	35.63	22.9
16.6	42.87	60.4	16.5	42.68	10.3	16.4	40.04	18.3	16.3	35.47	22.9
17.6	42.92	60.8	17.5	42.62	10.7	17.4	39.91	18.6	17.3	35.30	23.0
18.5	42.96	61.1	18.5	42.55	11.0	18.4	39.78	18.7	18.3	35.14	23.0
19.5	42.99	61.5	19.5	42.48	11.3	19.4	39.65	18.9	19.3	34.99	23.1
20.5	43.01	61.9	20.5	42.42	11.6	20.4	39.52	19.1	20.3	34.83	23.2
21.5	43.03	62.2	21.5	42.35	11.8	21.4	39.40	19.2	21.3	34.67	23.2
22.5	43.03	62.5	22.5	42.28	12.1	22.4	39.28	19.4	22.3	34.50	23.3
23.5	43.04	62.9	23.4	42.22	12.3	23.4	39.16	19.6	23.3	34.33	23.4
24.5	43.05	63.2	24.4	42.16	12.6	24.4	39.03	19.8	24.3	34.15	23.5
25.5	43.06	63.4	25.4	42.10	12.9	25.4	38.90	20.0	25.3	33.96	23.6
26.5	43.07	63.7	26.4	42.04	13.1	26.4	38.77	20.2	26.3	33.78	23.6
27.5	43.08	64.0	27.4	41.97	13.4	27.4	38.63	20.4	27.3	33.59	23.6
28.5	43.10	64.3	28.4	41.90	13.7	28.4	38.48	20.6	28.3	33.40	23.6
29.5	43.11	64.6	29.4	41.82	14.1	29.4	38.32	20.8	29.3	33.22	23.6
30.5	43.12	64.9	30.4	41.73	14.4	30.4	38.16	21.0	30.3	33.05	23.6
31.5	43.13	65.3	31.4	41.63	14.7	31.3	38.00	21.1	31.3	32.88	23.6
32.5	43.12	65.6	32.4	41.53	15.0	32.3	37.85	21.3	32.3	32.71	23.5

APPARENT PLACES OF ϵ URSAE MINORIS, FOR THE UPPER TRANSIT
AT WASHINGTON.

Mean Solar Date.	SEPTEMBER.		Mean Solar Date.	OCTOBER.		Mean Solar Date.	NOVEMBER.		Mean Solar Date.	DECEMBER.	
	Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.
	^h ^m 16 59	[°] ['] 82° 15'		^h ^m 16 59	[°] ['] 82° 15'		^h ^m 16 59	[°] ['] 82° 15'		^h ^m 16 59	[°] ['] 82° 14'
1.3	32.71	23.5	1.2	27.43	21.3	1.1	22.83	14.7	1.0	20.31	64.9
2.3	32.54	23.5	2.2	27.27	21.2	2.1	22.70	14.4	2.0	20.27	64.6
3.3	32.38	23.5	3.2	27.10	21.1	3.1	22.57	14.2	3.0	20.23	64.2
4.3	32.21	23.5	4.2	26.93	21.0	4.1	22.44	13.8	4.0	20.20	63.8
5.2	32.03	23.6	5.2	26.76	20.8	5.1	22.32	13.5	5.0	20.17	63.4
6.2	31.85	23.6	6.2	26.58	20.7	6.1	22.21	13.2	6.0	20.16	63.0
7.2	31.66	23.6	7.2	26.40	20.5	7.1	22.11	12.8	7.0	20.15	62.6
8.2	31.47	23.6	8.2	26.23	20.3	8.1	22.01	12.5	8.0	20.14	62.3
9.2	31.28	23.6	9.2	26.07	20.1	9.1	21.92	12.2	9.0	20.13	61.9
10.2	31.09	23.5	10.2	25.91	19.9	10.1	21.83	11.9	10.0	20.12	61.6
11.2	30.90	23.4	11.2	25.75	19.6	11.1	21.74	11.6	11.0	20.11	61.3
12.2	30.72	23.4	12.2	25.61	19.4	12.1	21.65	11.3	12.0	20.09	61.0
13.2	30.55	23.2	13.1	25.46	19.2	13.1	21.56	11.0	13.0	20.07	60.6
14.2	30.38	23.1	14.1	25.32	19.0	14.1	21.47	10.7	14.0	20.06	60.2
15.2	30.21	23.1	15.1	25.18	18.8	15.1	21.37	10.4	15.0	20.04	59.9
16.2	30.04	23.0	16.1	25.03	18.6	16.1	21.27	10.1	16.0	20.04	59.5
17.2	29.88	22.9	17.1	24.88	18.5	17.0	21.18	9.8	17.0	20.05	59.1
18.2	29.71	22.9	18.1	24.72	18.3	18.0	21.09	9.4	18.0	20.06	58.7
19.2	29.53	22.8	19.1	24.57	18.1	19.0	21.00	9.1	19.0	20.09	58.3
20.2	29.35	22.8	20.1	24.41	17.8	20.0	20.93	8.7	20.0	20.12	57.9
21.2	29.16	22.7	21.1	24.25	17.6	21.0	20.86	8.3	21.0	20.15	57.5
22.2	28.97	22.6	22.1	24.10	17.3	22.0	20.80	7.9	22.0	20.19	57.2
23.2	28.78	22.5	23.1	23.96	17.1	23.0	20.75	7.6	23.0	20.22	56.8
24.2	28.60	22.4	24.1	23.82	16.8	24.0	20.70	7.2	23.9	20.25	56.5
25.2	28.42	22.3	25.1	23.69	16.5	25.0	20.65	6.9	24.9	20.28	56.2
26.2	28.24	22.1	26.1	23.57	16.2	26.0	20.60	6.6	25.9	20.30	55.9
27.2	28.08	21.9	27.1	23.45	15.9	27.0	20.54	6.3	26.9	20.33	55.5
28.2	27.91	21.8	28.1	23.33	15.7	28.0	20.49	6.0	27.9	20.36	55.2
29.2	27.75	21.6	29.1	23.21	15.4	29.0	20.43	5.6	28.9	20.40	54.8
30.2	27.59	21.5	30.1	23.09	15.2	30.0	20.37	5.3	29.9	20.44	54.4
31.2	27.43	21.3	31.1	22.96	15.0	31.0	20.31	4.9	30.9	20.49	54.0
32.2	27.27	21.2	32.1	22.83	14.7	32.0	20.27	4.6	31.9	20.55	53.7

APPARENT PLACES OF δ URSE MINORIS, FOR THE UPPER TRANSIT
AT WASHINGTON.

Mean Solar Date.	JANUARY.		Mean Solar Date.	FEBRUARY.		Mean Solar Date.	MARCH.		Mean Solar Date.	APRIL.	
	Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.
	^h ^m 18 14	[°] ['] 86 36		^h ^m 18 14	[°] ['] 86 36		^h ^m 18 14	[°] ['] 86 36		^h ^m 18 14	[°] ['] 86 36
1.0	35.40	24.2	1.9	38.73	14.0	1.8	46.86	7.8	1.7	57.88	6.5
2.0	35.43	23.9	2.9	38.91	13.8	2.8	47.17	7.7	2.7	58.23	6.5
3.0	35.46	23.6	3.9	39.11	13.5	3.8	47.48	7.5	3.7	58.60	6.6
4.0	35.49	23.3	4.9	39.29	13.2	4.8	47.79	7.4	4.7	58.98	6.6
5.0	35.51	23.0	5.9	39.49	12.9	5.8	48.13	7.3	5.7	59.36	6.7
6.0	35.52	22.6	6.9	39.70	12.6	6.8	48.49	7.1	6.7	59.74	6.8
7.0	35.51	22.3	7.9	39.93	12.3	7.8	48.86	7.0	7.7	60.12	6.9
8.0	35.51	22.0	8.9	40.19	12.0	8.8	49.23	6.8	8.7	60.48	7.0
9.0	35.52	21.6	9.9	40.47	11.8	9.8	49.63	6.8	9.7	60.82	7.2
10.0	35.54	21.3	10.9	40.76	11.5	10.8	50.03	6.7	10.7	61.14	7.3
11.0	35.58	20.9	11.9	41.06	11.3	11.8	50.41	6.6	11.7	61.45	7.5
11.9	35.65	20.5	12.9	41.35	11.0	12.8	50.78	6.6	12.7	61.75	7.6
12.9	35.75	20.2	13.9	41.64	10.9	13.8	51.13	6.6	13.7	62.04	7.7
13.9	35.85	19.8	14.9	41.91	10.7	14.8	51.47	6.6	14.7	62.35	7.8
14.9	35.96	19.5	15.9	42.18	10.5	15.8	51.80	6.5	15.7	62.66	7.9
15.9	36.09	19.1	16.9	42.43	10.3	16.8	52.12	6.5	16.7	62.99	8.0
16.9	36.22	18.8	17.8	42.70	10.1	17.8	52.46	6.4	17.7	63.33	8.1
17.9	36.34	18.5	18.8	42.96	9.9	18.8	52.81	6.3	18.7	63.66	8.2
18.9	36.45	18.3	19.8	43.23	9.6	19.8	53.17	6.3	19.7	64.01	8.4
19.9	36.55	18.0	20.8	43.51	9.4	20.8	53.55	6.2	20.7	64.35	8.6
20.9	36.64	17.7	21.8	43.82	9.2	21.8	53.95	6.2	21.7	64.68	8.8
21.9	36.74	17.4	22.8	44.16	8.9	22.8	54.33	6.1	22.7	64.99	9.0
22.9	36.84	17.0	23.8	44.50	8.7	23.8	54.73	6.2	23.7	65.28	9.2
23.9	36.97	16.7	24.8	44.85	8.6	24.8	55.13	6.2	24.7	65.54	9.4
24.9	37.11	16.3	25.8	45.21	8.4	25.7	55.51	6.2	25.7	65.80	9.6
25.9	37.28	16.0	26.8	45.56	8.3	26.7	55.88	6.3	26.7	66.05	9.8
26.9	37.46	15.6	27.8	45.91	8.2	27.7	56.23	6.3	27.7	66.29	10.0
27.9	37.66	15.3	28.8	46.24	8.0	28.7	56.56	6.4	28.7	66.54	10.2
28.9	37.87	15.1	29.8	46.56	7.9	29.7	56.89	6.5	29.7	66.80	10.4
29.9	38.11	14.8	30.8	46.86	7.8	30.7	57.21	6.5	30.7	67.07	10.5
30.9	38.32	14.5	31.8	47.17	7.7	31.7	57.55	6.5	31.6	67.35	10.7
31.9	38.53	14.2	32.8	47.48	7.5	32.7	57.88	6.5	32.6	67.64	10.9

APPARENT PLACES OF δ URSÆ MINORIS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	MAY.		Mean Solar Date.	JUNE.		Mean Solar Date.	JULY.		Mean Solar Date.	AUGUST.	
	Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.
	^h ^m 18 15	[°] ['] 88 36		^h ^m 18 15	[°] ['] 88 36		^h ^m 18 15	[°] ['] 88 36		^h ^m 18 14	[°] ['] 88 36
1.6	^s 7.35	["] 10.7	1.6	^s 12.87	["] 19.1	1.5	^s 12.42	["] 28.6	1.4	^s 66.15	["] 37.3
2.6	7.64	10.9	2.6	12.96	19.4	2.5	12.27	29.0	2.4	65.85	37.5
3.6	7.94	11.1	3.6	13.03	19.8	3.5	12.13	29.3	3.4	65.56	37.7
4.6	8.22	11.4	4.6	13.07	20.1	4.5	11.96	29.6	4.4	65.28	37.9
5.6	8.48	11.6	5.6	13.09	20.5	5.5	11.80	29.9	5.4	65.01	38.1
6.6	8.73	11.9	6.6	13.11	20.8	6.5	11.64	30.1	6.4	64.73	38.3
7.6	8.95	12.2	7.5	13.12	21.1	7.5	11.50	30.4	7.4	64.47	38.6
8.6	9.14	12.5	8.5	13.14	21.4	8.5	11.39	30.7	8.4	64.20	38.8
9.6	9.33	12.7	9.5	13.16	21.6	9.5	11.26	30.9	9.4	63.90	39.0
10.6	9.51	13.0	10.5	13.20	21.9	10.5	11.13	31.2	10.4	63.59	39.3
11.6	9.69	13.2	11.5	13.24	22.2	11.5	11.00	31.6	11.4	63.25	39.5
12.6	9.87	13.4	12.5	13.28	22.5	12.5	10.84	31.9	12.4	62.89	39.8
13.6	10.07	13.7	13.5	13.32	22.8	13.4	10.68	32.2	13.4	62.53	40.0
14.6	10.29	13.9	14.5	13.36	23.1	14.4	10.50	32.5	14.4	62.15	40.2
15.6	10.50	14.1	15.5	13.37	23.5	15.4	10.29	32.9	15.4	61.79	40.3
16.6	10.71	14.4	16.5	13.37	23.9	16.4	10.05	33.2	16.4	61.42	40.5
17.6	10.92	14.7	17.5	13.34	24.2	17.4	9.82	33.4	17.4	61.08	40.6
18.6	11.11	15.0	18.5	13.29	24.6	18.4	9.58	33.7	18.4	60.75	40.8
19.6	11.29	15.3	19.5	13.24	24.9	19.4	9.34	34.0	19.3	60.43	40.9
20.6	11.45	15.6	20.5	13.16	25.2	20.4	9.11	34.2	20.3	60.10	41.1
21.6	11.59	15.9	21.5	13.08	25.5	21.4	8.90	34.4	21.3	59.77	41.3
22.6	11.70	16.2	22.5	13.01	25.8	22.4	8.70	34.7	22.3	59.44	41.5
23.6	11.81	16.5	23.5	12.94	26.1	23.4	8.49	34.9	23.3	59.10	41.6
24.6	11.91	16.8	24.5	12.89	26.3	24.4	8.30	35.2	24.3	58.73	41.8
25.6	12.01	17.1	25.5	12.85	26.6	25.4	8.10	35.5	25.3	58.34	42.0
26.6	12.11	17.3	26.5	12.81	26.9	26.4	7.87	35.7	26.3	57.93	42.2
27.6	12.23	17.6	27.5	12.77	27.3	27.4	7.62	36.0	27.3	57.52	42.4
28.6	12.37	17.9	28.5	12.71	27.6	28.4	7.35	36.3	28.3	57.10	42.5
29.6	12.49	18.1	29.5	12.63	28.0	29.4	7.07	36.6	29.3	56.70	42.6
30.6	12.62	18.4	30.5	12.53	28.3	30.4	6.77	36.9	30.3	56.29	42.7
31.6	12.75	18.8	31.5	12.42	28.6	31.4	6.46	37.1	31.3	55.91	42.8
32.6	12.87	19.1	32.5	12.27	29.0	32.4	6.15	37.3	32.3	55.54	42.9

APPARENT PLACES OF δ URSÆ MINORIS, FOR THE UPPER TRANSIT
AT WASHINGTON.

Mean Solar Date.	SEPTEMBER.		Mean Solar Date.	OCTOBER.		Mean Solar Date.	NOVEMBER.		Mean Solar Date.	DECEMBER.	
	Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.
	^h ^m 18 14	[°] ['] 88 36		^h ^m 18 14	[°] ['] 88 36		^h ^m 18 14	[°] ['] 88 36		^h ^m 18 14	[°] ['] 88 36
1.3	^s 55.54	["] 42.9	1.2	^s 43.16	["] 44.3	1.1	^s 30.64	["] 41.1	1.1	^s 21.49	["] 33.9
2.3	55.17	42.9	2.2	42.76	44.3	2.1	30.24	41.0	2.1	21.24	33.6
3.3	54.81	43.1	3.2	42.36	44.3	3.1	29.86	40.8	3.1	21.00	33.2
4.3	54.44	43.2	4.2	41.93	44.3	4.1	29.47	40.6	4.1	20.78	32.9
5.3	54.07	43.3	5.2	41.49	44.2	5.1	29.08	40.4	5.1	20.59	32.6
6.3	53.68	43.5	6.2	41.03	44.2	6.1	28.71	40.2	6.1	20.41	32.2
7.3	53.28	43.6	7.2	40.57	44.2	7.1	28.36	39.9	7.0	20.24	31.9
8.3	52.84	43.7	8.2	40.12	44.1	8.1	28.02	39.7	8.0	20.10	31.6
9.3	52.40	43.8	9.2	39.67	44.0	9.1	27.71	39.4	9.0	19.97	31.2
10.3	51.96	43.9	10.2	39.23	43.9	10.1	27.40	39.2	10.0	19.82	31.0
11.3	51.51	43.9	11.2	38.81	43.8	11.1	27.11	39.0	11.0	19.67	30.7
12.3	51.08	44.0	12.2	38.42	43.7	12.1	26.81	38.8	12.0	19.50	30.4
13.3	50.66	44.0	13.2	38.03	43.6	13.1	26.51	38.6	13.0	19.33	30.1
14.3	50.25	44.0	14.2	37.65	43.5	14.1	26.19	38.4	14.0	19.16	29.8
15.3	49.85	44.1	15.2	37.28	43.4	15.1	25.87	38.2	15.0	18.99	29.4
16.3	49.46	44.1	16.2	36.90	43.3	16.1	25.52	38.0	16.0	18.83	29.1
17.3	49.08	44.1	17.2	36.50	43.3	17.1	25.20	37.7	17.0	18.69	28.7
18.3	48.69	44.2	18.2	36.09	43.2	18.1	24.86	37.5	18.0	18.57	28.3
19.3	48.29	44.3	19.2	35.67	43.1	19.1	24.54	37.2	19.0	18.47	28.0
20.3	47.88	44.3	20.2	35.23	43.0	20.1	24.23	36.9	20.0	18.40	27.6
21.3	47.45	44.4	21.2	34.80	42.9	21.1	23.95	36.6	21.0	18.33	27.2
22.3	47.00	44.4	22.2	34.36	42.7	22.1	23.70	36.3	22.0	18.29	26.9
23.3	46.55	44.5	23.2	33.94	42.6	23.1	23.45	36.0	23.0	18.25	26.6
24.3	46.09	44.5	24.2	33.54	42.4	24.1	23.21	35.7	24.0	18.19	26.3
25.2	45.63	44.5	25.2	33.16	42.2	25.1	22.99	35.5	25.0	18.14	26.0
26.2	45.17	44.4	26.2	32.79	42.0	26.1	22.75	35.2	26.0	18.07	25.7
27.2	44.75	44.4	27.2	32.44	41.9	27.1	22.52	35.0	27.0	17.99	25.3
28.2	44.34	44.3	28.2	32.09	41.7	28.1	22.28	34.7	28.0	17.92	25.0
29.2	43.94	44.3	29.2	31.75	41.6	29.1	22.02	34.5	29.0	17.85	24.6
30.2	43.54	44.3	30.2	31.39	41.4	30.1	21.75	34.2	30.0	17.81	24.3
31.2	43.16	44.3	31.2	31.02	41.3	31.1	21.49	33.9	31.0	17.76	23.9
32.2	42.76	44.3	32.1	30.64	41.1	32.1	21.24	33.6	32.0	17.75	23.5

APPARENT PLACES OF λ URSÆ MINORIS, FOR THE UPPER TRANSIT
AT WASHINGTON.

Mean Solar Date.	JANUARY.		Mean Solar Date.	FEBRUARY.		Mean Solar Date.	MARCH.		Mean Solar Date.	APRIL.	
	Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.
	^h ^m 19 55	[°] ['] 88 54		^h ^m 19 55	[°] ['] 88 54		^h ^m 19 55	[°] ['] 88 54		^h ^m 19 56	[°] ['] 88 54
1.1	^s 29.12	["] 58.6	1.0	^s 22.83	["] 48.6	1.9	^s 36.59	["] 39.8	1.8	^s 5.42	["] 34.5
2.1	28.69	58.3	2.0	23.00	48.3	2.9	37.22	39.6	2.8	6.45	34.4
3.1	28.29	58.0	3.0	23.15	48.0	3.9	37.87	39.3	3.8	7.53	34.3
4.1	27.90	57.7	4.0	23.27	47.7	4.9	38.54	39.1	4.8	8.65	34.2
5.0	27.47	57.5	5.0	23.37	47.4	5.9	39.25	38.8	5.8	9.85	34.1
6.0	27.01	57.2	6.0	23.48	47.1	6.9	40.03	38.5	6.8	11.07	34.1
7.0	26.52	56.9	7.0	23.63	46.8	7.9	40.88	38.3	7.8	12.30	34.0
8.0	26.00	56.6	8.0	23.86	46.4	8.9	41.79	38.0	8.8	13.51	34.0
9.0	25.47	56.3	8.9	24.15	46.0	9.9	42.77	37.8	9.8	14.66	34.0
10.0	24.97	56.0	9.9	24.52	45.7	10.9	43.76	37.6	10.8	15.76	34.0
11.0	24.52	55.6	10.9	24.96	45.3	11.9	44.76	37.4	11.8	16.80	34.0
12.0	24.14	55.3	11.9	25.45	45.0	12.9	45.74	37.2	12.8	17.80	34.0
13.0	23.84	54.9	12.9	25.97	44.7	13.9	46.69	37.1	13.8	18.78	34.0
14.0	23.61	54.6	13.9	26.50	44.4	14.9	47.59	36.9	14.8	19.76	34.0
15.0	23.45	54.2	14.9	26.99	44.2	15.9	48.44	36.8	15.8	20.76	34.0
16.0	23.34	53.9	15.9	27.45	43.9	16.8	49.26	36.6	16.8	21.83	33.9
17.0	23.24	53.6	16.9	27.88	43.7	17.8	50.10	36.4	17.8	22.95	33.9
18.0	23.13	53.3	17.9	28.28	43.4	18.8	50.95	36.3	18.8	24.10	33.9
19.0	23.00	53.0	18.9	28.68	43.1	19.8	51.87	36.1	19.8	25.31	33.9
20.0	22.83	52.7	19.9	29.09	42.8	20.8	52.84	35.9	20.8	26.52	34.0
21.0	22.64	52.4	20.9	29.55	42.5	21.8	53.87	35.7	21.7	27.73	34.0
22.0	22.41	52.0	21.9	30.08	42.1	22.8	54.97	35.5	22.7	28.90	34.1
23.0	22.21	51.7	22.9	30.68	41.8	23.8	56.11	35.4	23.7	30.01	34.2
24.0	22.04	51.4	23.9	31.34	41.5	24.8	57.27	35.2	24.7	31.07	34.3
25.0	21.92	51.0	24.9	32.08	41.2	25.8	58.41	35.1	25.7	32.06	34.4
26.0	21.89	50.6	25.9	32.86	40.9	26.8	59.51	35.1	26.7	33.01	34.4
27.0	21.93	50.3	26.9	33.65	40.7	27.8	60.58	35.0	27.7	33.94	34.5
28.0	22.05	49.9	27.9	34.43	40.5	28.8	61.60	34.9	28.7	34.88	34.6
29.0	22.23	49.5	28.9	35.20	40.2	29.8	62.56	34.8	29.7	35.84	34.6
30.0	22.41	49.2	29.9	35.91	40.0	30.8	63.51	34.7	30.7	36.86	34.7
31.0	22.63	48.9	30.9	36.59	39.8	31.8	64.45	34.6	31.7	37.92	34.7
32.0	22.83	48.6	31.9	37.22	39.6	32.8	65.42	34.5	32.7	39.03	34.8

**APPARENT PLACES OF λ URSAE MINORIS, FOR THE UPPER TRANSIT
AT WASHINGTON.**

Mean Solar Date.	MAY.		Mean Solar Date.	JUNE.		Mean Solar Date.	JULY.		Mean Solar Date.	AUGUST.	
	Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.
	^h ^m 19 56	[°] ['] 88 54		^h ^m 19 57	[°] ['] 88 54		^h ^m 19 57	[°] ['] 88 54		^h ^m 19 56	[°] ['] 88 54
1.7	37.92	34.7	1.6	5.28	40.2	1.6	17.55	49.0	1.5	72.13	59.2
2.7	39.03	34.8	2.6	6.01	40.5	2.6	17.61	49.3	2.5	71.55	59.5
3.7	40.17	34.9	3.6	6.69	40.8	3.6	17.61	49.7	3.5	71.00	59.8
4.7	41.31	35.0	4.6	7.30	41.0	4.6	17.57	50.0	4.5	70.48	60.1
5.7	42.43	35.1	5.6	7.85	41.3	5.5	17.50	50.3	5.5	70.00	60.4
6.7	43.50	35.3	6.6	8.32	41.6	6.5	17.44	50.6	6.5	69.56	60.6
7.7	44.51	35.5	7.6	8.77	41.9	7.5	17.42	50.9	7.5	69.14	61.0
8.7	45.45	35.6	8.6	9.21	42.1	8.5	17.43	51.2	8.5	68.71	61.3
9.7	46.33	35.8	9.6	9.66	42.4	9.5	17.47	51.5	9.4	68.24	61.6
10.7	47.17	36.0	10.6	10.15	42.6	10.5	17.55	51.8	10.4	67.69	62.0
11.7	47.98	36.1	11.6	10.67	42.8	11.5	17.63	52.1	11.4	67.08	62.3
12.7	48.82	36.2	12.6	11.24	43.1	12.5	17.67	52.4	12.4	66.41	62.6
13.7	49.68	36.3	13.6	11.83	43.3	13.5	17.67	52.8	13.4	65.66	63.0
14.7	50.58	36.5	14.6	12.40	43.6	14.5	17.61	53.2	14.4	64.87	63.3
15.7	51.53	36.6	15.6	12.95	44.0	15.5	17.47	53.6	15.4	64.06	63.6
16.7	52.51	36.8	16.6	13.44	44.3	16.5	17.27	53.9	16.4	63.25	63.9
17.7	53.51	36.9	17.6	13.86	44.6	17.5	16.99	54.3	17.4	62.48	64.1
18.7	54.51	37.1	18.6	14.21	45.0	18.5	16.69	54.6	18.4	61.74	64.4
19.7	55.48	37.3	19.6	14.48	45.3	19.5	16.37	54.9	19.4	61.03	64.6
20.7	56.38	37.6	20.6	14.71	45.6	20.5	16.06	55.2	20.4	60.38	64.9
21.7	57.21	37.8	21.6	14.91	45.9	21.5	15.78	55.5	21.4	59.73	65.2
22.7	57.97	38.1	22.6	15.11	46.2	22.5	15.54	55.8	22.4	59.07	65.5
23.7	58.66	38.3	23.6	15.35	46.4	23.5	15.34	56.1	23.4	58.36	65.8
24.7	59.32	38.5	24.6	15.61	46.7	24.5	15.17	56.4	24.4	57.59	66.1
25.7	59.98	38.7	25.6	15.89	47.0	25.5	14.98	56.7	25.4	56.74	66.4
26.7	60.64	38.9	26.6	16.23	47.3	26.5	14.76	57.1	26.4	55.89	66.7
27.7	61.33	39.1	27.6	16.56	47.6	27.5	14.48	57.5	27.4	54.84	67.0
28.6	62.07	39.3	28.6	16.89	47.9	28.5	14.14	57.8	28.4	53.83	67.3
29.6	62.85	39.5	29.6	17.18	48.3	29.5	13.72	58.2	29.4	52.81	67.6
30.6	63.67	39.7	30.6	17.40	48.6	30.5	13.23	58.5	30.4	51.80	67.8
31.6	64.49	39.9	31.6	17.55	49.0	31.5	12.69	58.9	31.4	50.84	68.0
32.6	65.28	40.2	32.6	17.61	49.3	32.5	12.13	59.2	32.4	49.93	68.2

APPARENT PLACES OF λ URSÆ MINORIS, FOR THE UPPER TRANSIT
AT WASHINGTON.

Mean Solar Date.	SEPTEMBER.		Mean Solar Date.	OCTOBER.		Mean Solar Date.	NOVEMBER.		Mean Solar Date.	DECEMBER.	
	Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.
	^h ₁₉ ^m ₅₆	[°] ₈₈ ['] ₅₅		^h ₁₉ ^m ₅₅	[°] ₈₈ ['] ₅₅		^h ₁₉ ^m ₅₄	[°] ₈₈ ['] ₅₅		^h ₁₉ ^m ₅₄	[°] ₈₈ ['] ₅₅
1.4	49.93	8.2	1.3	76.65	14.3	1.2	96.22	16.3	1.1	59.04	13.4
2.4	49.04	8.5	2.3	75.52	14.4	2.2	94.87	16.3	2.1	57.84	13.2
3.4	48.20	8.7	3.3	74.37	14.6	3.2	93.46	16.3	3.1	56.65	13.0
4.4	47.34	9.0	4.3	73.15	14.7	4.2	92.03	16.3	4.1	55.49	12.8
5.4	46.46	9.2	5.3	71.87	14.9	5.2	90.59	16.3	5.1	54.41	12.5
6.4	45.54	9.5	6.3	70.54	15.1	6.2	89.17	16.2	6.1	53.40	12.3
7.4	44.55	9.8	7.3	69.15	15.2	7.2	87.81	16.1	7.1	52.46	12.1
8.4	43.50	10.0	8.3	67.73	15.3	8.2	86.49	16.0	8.1	51.58	11.8
9.4	42.38	10.3	9.3	66.31	15.4	9.2	85.23	15.9	9.1	50.71	11.6
10.4	41.23	10.6	10.3	64.91	15.5	10.2	84.03	15.8	10.1	49.86	11.4
11.4	40.04	10.8	11.3	63.56	15.5	11.2	82.86	15.8	11.1	48.99	11.2
12.4	38.85	11.0	12.3	62.26	15.6	12.2	81.71	15.7	12.1	48.08	11.1
13.4	37.67	11.2	13.3	61.01	15.6	13.2	80.55	15.6	13.1	47.13	10.9
14.3	36.55	11.3	14.3	59.80	15.7	14.2	79.35	15.6	14.1	46.14	10.6
15.3	35.48	11.5	15.3	58.60	15.7	15.2	78.10	15.5	15.1	45.13	10.4
16.3	34.44	11.7	16.3	57.39	15.8	16.2	76.80	15.5	16.1	44.14	10.2
17.3	33.43	11.9	17.3	56.15	15.9	17.2	75.46	15.4	17.1	43.17	9.9
18.3	32.42	12.1	18.3	54.96	16.0	18.2	74.11	15.3	18.1	42.27	9.6
19.3	31.38	12.3	19.3	53.51	16.1	19.2	72.75	15.2	19.1	41.43	9.3
20.3	30.28	12.5	20.3	52.12	16.2	20.2	71.43	15.0	20.1	40.66	9.0
21.3	29.13	12.7	21.2	50.66	16.3	21.2	70.17	14.9	21.1	39.97	8.7
22.3	27.91	13.0	22.2	49.20	16.3	22.2	68.97	14.7	22.1	39.33	8.5
23.3	26.63	13.2	23.2	47.75	16.3	23.2	67.83	14.5	23.1	38.72	8.2
24.3	25.31	13.3	24.2	46.32	16.3	24.2	66.77	14.4	24.1	38.10	7.9
25.3	23.95	13.5	25.2	44.96	16.3	25.2	65.73	14.2	25.1	37.46	7.7
26.3	22.64	13.6	26.2	43.64	16.3	26.1	64.69	14.1	26.1	36.80	7.4
27.3	21.36	13.8	27.2	42.39	16.3	27.1	63.63	13.9	27.1	36.10	7.2
28.3	20.13	13.9	28.2	41.18	16.2	28.1	62.55	13.8	28.1	35.35	6.9
29.3	18.94	14.0	29.2	39.97	16.3	29.1	61.42	13.7	29.1	34.60	6.6
30.3	17.78	14.1	30.2	38.77	16.3	30.1	60.25	13.5	30.1	33.87	6.3
31.3	16.65	14.3	31.2	37.52	16.3	31.1	59.04	13.4	31.1	33.18	6.0
32.3	15.52	14.4	32.2	36.22	16.3	32.1	57.84	13.2	32.1	32.57	5.7

APPARENT PLACES OF α URSÆ MINORIS, (*Polaris*), FOR THE UPPER TRANSIT
AT WASHINGTON.

Mean Solar Date.	SEPTEMBER.		Mean Solar Date.	OCTOBER.		Mean Solar Date.	NOVEMBER.		Mean Solar Date.	DECEMBER.	
	Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.
	^h ^m 1 11	[°] ['] 88 36		^h ^m 1 11	[°] ['] 88 36		^h ^m 1 11	[°] ['] 88 36		^h ^m 1 11	[°] ['] 88 36
1.6	44.77	15.7	1.5	56.00	26.2	1.4	55.76	37.8	1.3	42.75	47.6
2.6	45.24	16.0	2.5	56.24	26.5	2.4	55.61	38.2	2.3	42.09	47.9
3.6	45.74	16.3	3.5	56.50	26.9	3.4	55.41	38.6	3.3	41.36	48.1
4.6	46.29	16.6	4.5	56.78	27.3	4.4	55.16	39.0	4.3	40.61	48.4
5.6	46.88	16.9	5.5	57.04	27.6	5.4	54.83	39.4	5.3	39.82	48.7
6.6	47.48	17.2	6.5	57.26	28.0	6.4	54.44	39.8	6.3	39.05	48.9
7.6	48.09	17.5	7.5	57.42	28.5	7.4	54.03	40.1	7.3	38.29	49.1
8.6	48.66	17.9	8.5	57.52	28.9	8.4	53.58	40.5	8.3	37.56	49.3
9.6	49.20	18.3	9.5	57.54	29.3	9.4	53.15	40.8	9.3	36.88	49.5
10.6	49.67	18.6	10.5	57.53	29.7	10.4	52.76	41.1	10.3	36.23	49.7
11.6	50.07	19.0	11.5	57.48	30.1	11.4	52.39	41.4	11.3	35.60	49.9
12.6	50.42	19.4	12.5	57.43	30.4	12.4	52.06	41.7	12.3	34.98	50.1
13.6	50.74	19.7	13.5	57.39	30.8	13.4	51.76	42.0	13.3	34.32	50.4
14.6	51.03	20.1	14.5	57.39	31.1	14.4	51.46	42.3	14.3	33.61	50.6
15.6	51.35	20.4	15.5	57.42	31.5	15.4	51.15	42.7	15.3	32.86	50.8
16.6	51.69	20.7	16.5	57.49	31.8	16.4	50.81	43.0	16.3	32.03	51.1
17.6	52.05	21.1	17.5	57.57	32.2	17.4	50.39	43.4	17.3	31.16	51.3
18.6	52.45	21.4	18.5	57.66	32.6	18.4	49.92	43.7	18.3	30.26	51.5
19.6	52.88	21.7	19.5	57.70	33.0	19.4	49.36	44.1	19.3	29.35	51.7
20.5	53.32	22.1	20.5	57.71	33.4	20.4	48.79	44.4	20.3	28.44	51.8
21.5	53.78	22.4	21.5	57.67	33.8	21.4	48.17	44.7	21.3	27.57	51.9
22.5	54.17	22.8	22.5	57.55	34.2	22.4	47.54	45.1	22.3	26.74	52.1
23.5	54.52	23.2	23.5	57.37	34.6	23.4	46.93	45.3	23.3	25.95	52.2
24.5	54.82	23.6	24.5	57.15	35.0	24.4	46.36	45.6	24.3	25.18	52.3
25.5	55.04	24.0	25.5	56.89	35.4	25.4	45.83	45.8	25.3	24.45	52.4
26.5	55.23	24.4	26.4	56.66	35.7	26.4	45.33	46.1	26.3	23.71	52.6
27.5	55.37	24.8	27.4	56.44	36.1	27.4	44.84	46.4	27.3	22.94	52.7
28.5	55.49	25.2	28.4	56.25	36.4	28.4	44.38	46.6	28.3	22.12	52.9
29.5	55.63	25.5	29.4	56.10	36.7	29.4	43.88	46.9	29.3	21.25	53.0
30.5	55.80	25.9	30.4	55.98	37.1	30.4	43.34	47.2	30.3	20.32	53.2
31.5	56.00	26.2	31.4	55.87	37.4	31.3	42.75	47.6	31.3	19.37	53.3
32.5	56.24	26.5	32.4	55.76	37.8	32.3	42.09	47.9	32.3	18.38	53.4

APPARENT PLACES OF ϵ URSÆ MINORIS, FOR THE UPPER TRANSIT
AT WASHINGTON.

Mean Solar Date.	JANUARY.		Mean Solar Date.	FEBRUARY.		Mean Solar Date.	MARCH.		Mean Solar Date.	APRIL.	
	Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.
	^h ^m 16 59	[°] ['] 82 14		^h ^m 16 59	[°] ['] 82 14		^h ^m 16 59	[°] ['] 82 14		^h ^m 16 59	[°] ['] 82 14
0.9	26.09	60.2	1.8	29.23	51.2	1.8	33.69	47.4	1.7	38.59	49.2
1.9	26.16	59.9	2.8	29.35	50.9	2.8	33.85	47.3	2.7	38.73	49.3
2.9	26.22	59.6	3.8	29.48	50.7	3.8	34.00	47.3	3.7	38.88	49.5
3.9	26.28	59.3	4.8	29.61	50.5	4.8	34.17	47.2	4.7	39.03	49.6
4.9	26.34	59.0	5.8	29.74	50.3	5.8	34.33	47.2	5.7	39.18	49.8
5.9	26.40	58.7	6.8	29.88	50.1	6.7	34.51	47.1	6.7	39.33	50.0
6.9	26.45	58.4	7.8	30.03	49.8	7.7	34.68	47.1	7.7	39.47	50.2
7.9	26.51	58.1	8.8	30.19	49.6	8.7	34.86	47.1	8.7	39.60	50.5
8.9	26.58	57.7	9.8	30.35	49.4	9.7	35.04	47.1	9.7	39.72	50.7
9.9	26.66	57.4	10.8	30.51	49.3	10.7	35.21	47.2	10.7	39.85	50.9
10.9	26.74	57.0	11.8	30.67	49.1	11.7	35.38	47.2	11.7	39.95	51.1
11.9	26.83	56.7	12.8	30.83	49.0	12.7	35.54	47.3	12.7	40.06	51.3
12.9	26.93	56.3	13.8	30.98	48.9	13.7	35.70	47.4	13.6	40.18	51.5
13.9	27.03	56.0	14.8	31.13	48.8	14.7	35.85	47.4	14.6	40.29	51.7
14.9	27.14	55.7	15.8	31.28	48.7	15.7	36.00	47.5	15.6	40.41	51.9
15.9	27.24	55.4	16.8	31.42	48.6	16.7	36.15	47.6	16.6	40.53	52.1
16.9	27.34	55.2	17.8	31.57	48.4	17.7	36.30	47.6	17.6	40.65	52.3
17.9	27.44	54.9	18.8	31.72	48.3	18.7	36.46	47.6	18.6	40.78	52.5
18.9	27.54	54.7	19.8	31.87	48.1	19.7	36.62	47.7	19.6	40.90	52.8
19.9	27.63	54.4	20.8	32.03	48.0	20.7	36.79	47.7	20.6	41.01	53.0
20.9	27.73	54.1	21.8	32.20	47.9	21.7	36.96	47.8	21.6	41.12	53.3
21.9	27.83	53.9	22.8	32.37	47.7	22.7	37.13	47.9	22.6	41.22	53.6
22.9	27.93	53.6	23.8	32.55	47.6	23.7	37.29	48.0	23.6	41.31	53.9
23.9	28.04	53.3	24.8	32.72	47.6	24.7	37.46	48.1	24.6	41.40	54.2
24.9	28.16	53.0	25.8	32.89	47.5	25.7	37.61	48.3	25.6	41.48	54.5
25.9	28.29	52.7	26.8	33.06	47.5	26.7	37.76	48.4	26.6	41.56	54.7
26.9	28.43	52.4	27.8	33.23	47.5	27.7	37.90	48.6	27.6	41.64	55.0
27.9	28.56	52.1	28.8	33.39	47.4	28.7	38.03	48.7	28.6	41.72	55.2
28.8	28.70	51.9	29.8	33.54	47.4	29.7	38.17	48.9	29.6	41.81	55.4
29.8	28.84	51.7	30.8	33.69	47.4	30.7	38.30	49.0	30.6	41.90	55.7
30.8	28.97	51.5	31.8	33.85	47.3	31.7	38.44	49.1	31.6	41.99	55.9
31.8	29.10	51.3	32.8	34.00	47.3	32.7	38.59	49.2	32.6	42.08	56.2

APPARENT PLACES OF ϵ URSÆ MINORIS, FOR THE UPPER TRANSIT
AT WASHINGTON.

Mean Solar Date.	MAY.		Mean Solar Date.	JUNE.		Mean Solar Date.	JULY.		Mean Solar Date.	AUGUST.	
	Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.
	^h ^m 16 59	[°] ['] 82° 14'		^h ^m 16 59	[°] ['] 82° 15'		^h ^m 16 59	[°] ['] 82° 15'		^h ^m 16 59	[°] ['] 82° 15'
1.6	41.99	55.9	1.5	43.12	5.6	1.4	41.63	14.7	1.3	37.85	21.3
2.6	42.08	56.2	2.5	43.11	6.0	2.4	41.53	15.0	2.3	37.70	21.4
3.6	42.17	56.5	3.5	43.09	6.3	3.4	41.43	15.2	3.3	37.55	21.5
4.6	42.25	56.8	4.5	43.07	6.7	4.4	41.32	15.5	4.3	37.41	21.6
5.6	42.32	57.2	5.5	43.03	7.0	5.4	41.22	15.7	5.3	37.27	21.7
6.6	42.38	57.5	6.5	43.00	7.3	6.4	41.12	15.9	6.3	37.12	21.8
7.6	42.43	57.8	7.5	42.97	7.6	7.4	41.03	16.1	7.3	36.98	22.0
8.6	42.48	58.1	8.5	42.94	7.9	8.4	40.93	16.3	8.3	36.83	22.1
9.6	42.53	58.5	9.5	42.91	8.1	9.4	40.84	16.6	9.3	36.66	22.3
10.6	42.57	58.7	10.5	42.89	8.4	10.4	40.75	16.8	10.3	36.50	22.4
11.6	42.62	59.0	11.5	42.86	8.7	11.4	40.65	17.1	11.3	36.33	22.6
12.6	42.68	59.3	12.5	42.84	9.0	12.4	40.54	17.3	12.3	36.16	22.7
13.6	42.72	59.6	13.5	42.81	9.3	13.4	40.43	17.6	13.3	35.98	22.8
14.6	42.77	59.8	14.5	42.77	9.7	14.4	40.30	17.9	14.3	35.80	22.8
15.6	42.83	60.1	15.5	42.73	10.0	15.4	40.17	18.1	15.3	35.63	22.9
16.6	42.87	60.4	16.5	42.68	10.3	16.4	40.04	18.3	16.3	35.47	22.9
17.6	42.92	60.8	17.5	42.62	10.7	17.4	39.91	18.6	17.3	35.30	23.0
18.5	42.96	61.1	18.5	42.55	11.0	18.4	39.78	18.7	18.3	35.14	23.0
19.5	42.99	61.5	19.5	42.48	11.3	19.4	39.65	18.9	19.3	34.99	23.1
20.5	43.01	61.9	20.5	42.42	11.6	20.4	39.52	19.1	20.3	34.83	23.2
21.5	43.03	62.2	21.5	42.35	11.8	21.4	39.40	19.2	21.3	34.67	23.2
22.5	43.03	62.5	22.5	42.28	12.1	22.4	39.28	19.4	22.3	34.50	23.3
23.5	43.04	62.9	23.4	42.22	12.3	23.4	39.16	19.6	23.3	34.33	23.4
24.5	43.05	63.2	24.4	42.16	12.6	24.4	39.03	19.8	24.3	34.15	23.5
25.5	43.06	63.4	25.4	42.10	12.9	25.4	38.90	20.0	25.3	33.96	23.6
26.5	43.07	63.7	26.4	42.04	13.1	26.4	38.77	20.2	26.3	33.78	23.6
27.5	43.08	64.0	27.4	41.97	13.4	27.4	38.63	20.4	27.3	33.59	23.6
28.5	43.10	64.3	28.4	41.90	13.7	28.4	38.48	20.6	28.3	33.40	23.6
29.5	43.11	64.6	29.4	41.82	14.1	29.4	38.32	20.8	29.3	33.22	23.6
30.5	43.12	64.9	30.4	41.73	14.4	30.4	38.16	21.0	30.3	33.05	23.6
31.5	43.13	65.3	31.4	41.63	14.7	31.3	38.00	21.1	31.3	32.88	23.6
32.5	43.12	65.6	32.4	41.53	15.0	32.3	37.85	21.3	32.3	32.71	23.5

APPARENT PLACES OF ϵ URSÆ MINORIS, FOR THE UPPER TRANSIT
AT WASHINGTON.

Mean Solar Date.	SEPTEMBER.		Mean Solar Date.	OCTOBER.		Mean Solar Date.	NOVEMBER.		Mean Solar Date.	DECEMBER.	
	Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.
	^h ^m 16 59	[°] ['] 82 15		^h ^m 16 59	[°] ['] 82 15		^h ^m 16 59	[°] ['] 82 15		^h ^m 16 59	[°] ['] 82 14
1.3	32.71	23.5	1.2	27.43	21.3	1.1	22.83	14.7	1.0	20.31	64.9
2.3	32.54	23.5	2.2	27.27	21.2	2.1	22.70	14.4	2.0	20.27	64.6
3.3	32.38	23.5	3.2	27.10	21.1	3.1	22.57	14.2	3.0	20.23	64.2
4.3	32.21	23.5	4.2	26.93	21.0	4.1	22.44	13.8	4.0	20.20	63.8
5.2	32.03	23.6	5.2	26.76	20.8	5.1	22.32	13.5	5.0	20.17	63.4
6.2	31.85	23.6	6.2	26.58	20.7	6.1	22.21	13.2	6.0	20.16	63.0
7.2	31.66	23.6	7.2	26.40	20.5	7.1	22.11	12.8	7.0	20.15	62.6
8.2	31.47	23.6	8.2	26.23	20.3	8.1	22.01	12.5	8.0	20.14	62.3
9.2	31.28	23.6	9.2	26.07	20.1	9.1	21.92	12.2	9.0	20.13	61.9
10.2	31.09	23.5	10.2	25.91	19.9	10.1	21.83	11.9	10.0	20.12	61.6
11.2	30.90	23.4	11.2	25.75	19.6	11.1	21.74	11.6	11.0	20.11	61.3
12.2	30.72	23.4	12.2	25.61	19.4	12.1	21.65	11.3	12.0	20.09	61.0
13.2	30.55	23.2	13.1	25.46	19.2	13.1	21.56	11.0	13.0	20.07	60.6
14.2	30.38	23.1	14.1	25.32	19.0	14.1	21.47	10.7	14.0	20.06	60.2
15.2	30.21	23.1	15.1	25.18	18.8	15.1	21.37	10.4	15.0	20.04	59.9
16.2	30.04	23.0	16.1	25.03	18.6	16.1	21.27	10.1	16.0	20.04	59.5
17.2	29.88	22.9	17.1	24.88	18.5	17.0	21.18	9.8	17.0	20.05	59.1
18.2	29.71	22.9	18.1	24.72	18.3	18.0	21.09	9.4	18.0	20.06	58.7
19.2	29.53	22.8	19.1	24.57	18.1	19.0	21.00	9.1	19.0	20.09	58.3
20.2	29.35	22.8	20.1	24.41	17.8	20.0	20.93	8.7	20.0	20.12	57.9
21.2	29.16	22.7	21.1	24.25	17.6	21.0	20.86	8.3	21.0	20.15	57.5
22.2	28.97	22.6	22.1	24.10	17.3	22.0	20.80	7.9	22.0	20.19	57.2
23.2	28.78	22.5	23.1	23.96	17.1	23.0	20.75	7.6	23.0	20.22	56.8
24.2	28.60	22.4	24.1	23.82	16.8	24.0	20.70	7.2	23.9	20.25	56.5
25.2	28.42	22.3	25.1	23.69	16.5	25.0	20.65	6.9	24.9	20.28	56.2
26.2	28.24	22.1	26.1	23.57	16.2	26.0	20.60	6.6	25.9	20.30	55.9
27.2	28.08	21.9	27.1	23.45	15.9	27.0	20.54	6.3	26.9	20.33	55.5
28.2	27.91	21.8	28.1	23.33	15.7	28.0	20.49	6.0	27.9	20.36	55.2
29.2	27.75	21.6	29.1	23.21	15.4	29.0	20.43	5.6	28.9	20.40	54.8
30.2	27.59	21.5	30.1	23.09	15.2	30.0	20.37	5.3	29.9	20.44	54.4
31.2	27.43	21.3	31.1	22.96	15.0	31.0	20.31	4.9	30.9	20.49	54.0
32.2	27.27	21.2	32.1	22.83	14.7	32.0	20.27	4.6	31.9	20.55	53.7

APPARENT PLACES OF δ URSE MINORIS, FOR THE UPPER TRANSIT
AT WASHINGTON.

Mean Solar Date.	JANUARY.		Mean Solar Date.	FEBRUARY.		Mean Solar Date.	MARCH.		Mean Solar Date.	APRIL.	
	Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.
	^h ^m 18 14	[°] ['] 86 36		^h ^m 18 14	[°] ['] 86 36		^h ^m 18 14	[°] ['] 86 36		^h ^m 18 14	[°] ['] 86 36
1.0	^s 35.40	^s 24.2	1.9	^s 38.73	["] 14.0	1.8	^s 46.86	["] 7.8	1.7	^s 57.88	["] 6.5
2.0	35.43	23.9	2.9	38.91	13.8	2.8	47.17	7.7	2.7	58.23	6.5
3.0	35.46	23.6	3.9	39.11	13.5	3.8	47.48	7.5	3.7	58.60	6.6
4.0	35.49	23.3	4.9	39.29	13.2	4.8	47.79	7.4	4.7	58.98	6.6
5.0	35.51	23.0	5.9	39.49	12.9	5.8	48.13	7.3	5.7	59.36	6.7
6.0	35.52	22.6	6.9	39.70	12.6	6.8	48.49	7.1	6.7	59.74	6.8
7.0	35.51	22.3	7.9	39.93	12.3	7.8	48.86	7.0	7.7	60.12	6.9
8.0	35.51	22.0	8.9	40.19	12.0	8.8	49.23	6.8	8.7	60.48	7.0
9.0	35.52	21.6	9.9	40.47	11.8	9.8	49.63	6.8	9.7	60.82	7.2
10.0	35.54	21.3	10.9	40.76	11.5	10.8	50.03	6.7	10.7	61.14	7.3
11.0	35.58	20.9	11.9	41.06	11.3	11.8	50.41	6.6	11.7	61.45	7.5
11.9	35.65	20.5	12.9	41.35	11.0	12.8	50.78	6.6	12.7	61.75	7.6
12.9	35.75	20.2	13.9	41.64	10.9	13.8	51.13	6.6	13.7	62.04	7.7
13.9	35.85	19.8	14.9	41.91	10.7	14.8	51.47	6.6	14.7	62.35	7.8
14.9	35.96	19.5	15.9	42.18	10.5	15.8	51.80	6.5	15.7	62.66	7.9
15.9	36.09	19.1	16.9	42.43	10.3	16.8	52.12	6.5	16.7	62.99	8.0
16.9	36.22	18.8	17.8	42.70	10.1	17.8	52.46	6.4	17.7	63.33	8.1
17.9	36.34	18.5	18.8	42.96	9.9	18.8	52.81	6.3	18.7	63.66	8.2
18.9	36.45	18.3	19.8	43.23	9.6	19.8	53.17	6.3	19.7	64.01	8.4
19.9	36.55	18.0	20.8	43.51	9.4	20.8	53.55	6.2	20.7	64.35	8.6
20.9	36.64	17.7	21.8	43.82	9.2	21.8	53.95	6.2	21.7	64.68	8.8
21.9	36.74	17.4	22.8	44.16	8.9	22.8	54.33	6.1	22.7	64.99	9.0
22.9	36.84	17.0	23.8	44.50	8.7	23.8	54.73	6.2	23.7	65.28	9.2
23.9	36.97	16.7	24.8	44.85	8.6	24.8	55.13	6.2	24.7	65.54	9.4
24.9	37.11	16.3	25.8	45.21	8.4	25.7	55.51	6.2	25.7	65.80	9.6
25.9	37.28	16.0	26.8	45.56	8.3	26.7	55.88	6.3	26.7	66.05	9.8
26.9	37.46	15.6	27.8	45.91	8.2	27.7	56.23	6.3	27.7	66.29	10.0
27.9	37.66	15.3	28.8	46.24	8.0	28.7	56.56	6.4	28.7	66.54	10.2
28.9	37.87	15.1	29.8	46.56	7.9	29.7	56.89	6.5	29.7	66.80	10.4
29.9	38.11	14.8	30.8	46.86	7.8	30.7	57.21	6.5	30.7	67.07	10.5
30.9	38.32	14.5	31.8	47.17	7.7	31.7	57.55	6.5	31.6	67.35	10.7
31.9	38.53	14.2	32.8	47.48	7.5	32.7	57.88	6.5	32.6	67.64	10.9

APPARENT PLACES OF δ URSÆ MINORIS, FOR THE UPPER TRANSIT
AT WASHINGTON.

Mean Solar Date.	MAY.		Mean Solar Date.	JUNE.		Mean Solar Date.	JULY.		Mean Solar Date.	AUGUST.	
	Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.
	^h 18	^m 15		^h 18	^m 15		^h 18	^m 15		^h 18	^m 14
		^s 36			^s 36			^s 36			^s 36
1.6	7.35	10.7	1.6	12.87	19.1	1.5	12.42	28.6	1.4	66.15	37.3
2.6	7.64	10.9	2.6	12.96	19.4	2.5	12.27	29.0	2.4	65.85	37.5
3.6	7.94	11.1	3.6	13.03	19.8	3.5	12.13	29.3	3.4	65.56	37.7
4.6	8.22	11.4	4.6	13.07	20.1	4.5	11.96	29.6	4.4	65.26	37.9
5.6	8.48	11.6	5.6	13.09	20.5	5.5	11.80	29.9	5.4	65.01	38.1
6.6	8.73	11.9	6.6	13.11	20.8	6.5	11.64	30.1	6.4	64.73	38.3
7.6	8.95	12.2	7.5	13.12	21.1	7.5	11.50	30.4	7.4	64.47	38.6
8.6	9.14	12.5	8.5	13.14	21.4	8.5	11.39	30.7	8.4	64.20	38.8
9.6	9.33	12.7	9.5	13.16	21.6	9.5	11.26	30.9	9.4	63.90	39.0
10.6	9.51	13.0	10.5	13.20	21.9	10.5	11.13	31.2	10.4	63.59	39.3
11.6	9.69	13.2	11.5	13.24	22.2	11.5	11.00	31.6	11.4	63.25	39.5
12.6	9.87	13.4	12.5	13.28	22.5	12.5	10.84	31.9	12.4	62.89	39.8
13.6	10.07	13.7	13.5	13.32	22.8	13.4	10.68	32.2	13.4	62.53	40.0
14.6	10.29	13.9	14.5	13.36	23.1	14.4	10.50	32.5	14.4	62.15	40.2
15.6	10.50	14.1	15.5	13.37	23.5	15.4	10.29	32.9	15.4	61.79	40.3
16.6	10.71	14.4	16.5	13.37	23.9	16.4	10.05	33.2	16.4	61.42	40.5
17.6	10.92	14.7	17.5	13.34	24.2	17.4	9.82	33.4	17.4	61.08	40.6
18.6	11.11	15.0	18.5	13.29	24.6	18.4	9.58	33.7	18.4	60.75	40.8
19.6	11.29	15.3	19.5	13.24	24.9	19.4	9.34	34.0	19.3	60.43	40.9
20.6	11.45	15.6	20.5	13.16	25.2	20.4	9.11	34.2	20.3	60.10	41.1
21.6	11.59	15.9	21.5	13.08	25.5	21.4	8.90	34.4	21.3	59.77	41.3
22.6	11.70	16.2	22.5	13.01	25.8	22.4	8.70	34.7	22.3	59.44	41.5
23.6	11.81	16.5	23.5	12.94	26.1	23.4	8.49	34.9	23.3	59.10	41.6
24.6	11.91	16.8	24.5	12.89	26.3	24.4	8.30	35.2	24.3	58.73	41.8
25.6	12.01	17.1	25.5	12.85	26.6	25.4	8.10	35.5	25.3	58.34	42.0
26.6	12.11	17.3	26.5	12.81	26.9	26.4	7.87	35.7	26.3	57.93	42.2
27.6	12.23	17.6	27.5	12.77	27.3	27.4	7.62	36.0	27.3	57.52	42.4
28.6	12.37	17.9	28.5	12.71	27.6	28.4	7.35	36.3	28.3	57.10	42.5
29.6	12.49	18.1	29.5	12.63	28.0	29.4	7.07	36.6	29.3	56.70	42.6
30.6	12.62	18.4	30.5	12.53	28.3	30.4	6.77	36.9	30.3	56.29	42.7
31.6	12.75	18.8	31.5	12.42	28.6	31.4	6.46	37.1	31.3	55.91	42.8
32.6	12.87	19.1	32.5	12.27	29.0	32.4	6.15	37.3	32.3	55.54	42.9

APPARENT PLACES OF δ URSÆ MINORIS, FOR THE UPPER TRANSIT
AT WASHINGTON.

Mean Solar Date.	SEPTEMBER.		Mean Solar Date.	OCTOBER.		Mean Solar Date.	NOVEMBER.		Mean Solar Date.	DECEMBER.	
	Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.
	^h ^m 18 14	[°] ['] 88 36		^h ^m 18 14	[°] ['] 88 36		^h ^m 18 14	[°] ['] 88 36		^h ^m 18 14	[°] ['] 88 36
1.3	^s 55.54	["] 42.9	1.2	^s 43.16	["] 44.3	1.1	^s 30.64	["] 41.1	1.1	^s 21.49	["] 33.9
2.3	55.17	42.9	2.2	42.76	44.3	2.1	30.24	41.0	2.1	21.24	33.6
3.3	54.51	43.1	3.2	42.36	44.3	3.1	29.86	40.8	3.1	21.00	33.2
4.3	54.44	43.2	4.2	41.93	44.3	4.1	29.47	40.6	4.1	20.78	32.9
5.3	54.07	43.3	5.2	41.49	44.2	5.1	29.08	40.4	5.1	20.59	32.6
6.3	53.68	43.5	6.2	41.03	44.2	6.1	28.71	40.2	6.1	20.41	32.2
7.3	53.28	43.6	7.2	40.57	44.2	7.1	28.36	39.9	7.0	20.24	31.9
8.3	52.84	43.7	8.2	40.12	44.1	8.1	28.02	39.7	8.0	20.10	31.6
9.3	52.40	43.8	9.2	39.67	44.0	9.1	27.71	39.4	9.0	19.97	31.2
10.3	51.96	43.9	10.2	39.23	43.9	10.1	27.40	39.2	10.0	19.82	31.0
11.3	51.51	43.9	11.2	38.81	43.8	11.1	27.11	39.0	11.0	19.67	30.7
12.3	51.08	44.0	12.2	38.42	43.7	12.1	26.81	38.8	12.0	19.50	30.4
13.3	50.66	44.0	13.2	38.03	43.6	13.1	26.51	38.6	13.0	19.33	30.1
14.3	50.25	44.0	14.2	37.65	43.5	14.1	26.19	38.4	14.0	19.16	29.8
15.3	49.85	44.1	15.2	37.28	43.4	15.1	25.87	38.2	15.0	18.99	29.4
16.3	49.46	44.1	16.2	36.90	43.3	16.1	25.52	38.0	16.0	18.83	29.1
17.3	49.08	44.1	17.2	36.50	43.3	17.1	25.20	37.7	17.0	18.69	28.7
18.3	48.69	44.2	18.2	36.09	43.2	18.1	24.86	37.5	18.0	18.57	28.3
19.3	48.29	44.3	19.2	35.67	43.1	19.1	24.54	37.2	19.0	18.47	28.0
20.3	47.88	44.3	20.2	35.23	43.0	20.1	24.23	36.9	20.0	18.40	27.6
21.3	47.45	44.4	21.2	34.80	42.9	21.1	23.95	36.6	21.0	18.33	27.2
22.3	47.00	44.4	22.2	34.36	42.7	22.1	23.70	36.3	22.0	18.29	26.9
23.3	46.55	44.5	23.2	33.94	42.6	23.1	23.45	36.0	23.0	18.25	26.6
24.3	46.09	44.5	24.2	33.54	42.4	24.1	23.21	35.7	24.0	18.19	26.3
25.2	45.63	44.5	25.2	33.16	42.2	25.1	22.99	35.5	25.0	18.14	26.0
26.2	45.17	44.4	26.2	32.79	42.0	26.1	22.75	35.2	26.0	18.07	25.7
27.2	44.75	44.4	27.2	32.44	41.9	27.1	22.52	35.0	27.0	17.99	25.3
28.2	44.34	44.3	28.2	32.09	41.7	28.1	22.28	34.7	28.0	17.92	25.0
29.2	43.94	44.3	29.2	31.75	41.6	29.1	22.02	34.5	29.0	17.85	24.6
30.2	43.54	44.3	30.2	31.39	41.4	30.1	21.75	34.2	30.0	17.81	24.3
31.2	43.16	44.3	31.2	31.02	41.3	31.1	21.49	33.9	31.0	17.76	23.9
32.2	42.76	44.3	32.1	30.64	41.1	32.1	21.24	33.6	32.0	17.75	23.5

APPARENT PLACES OF λ URSÆ MINORIS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	JANUARY.		Mean Solar Date.	FEBRUARY.		Mean Solar Date.	MARCH.		Mean Solar Date.	APRIL.	
	Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.
	^h ^m 19 55	[°] ['] 88 54		^h ^m 19 55	[°] ['] 88 54		^h ^m 19 55	[°] ['] 88 54		^h ^m 19 56	[°] ['] 88 54
1.1	29.12	58.6	1.0	22.83	48.6	1.9	36.59	39.8	1.8	5.42	34.5
2.1	28.69	58.3	2.0	23.00	48.3	2.9	37.22	39.6	2.8	6.45	34.4
3.1	28.29	58.0	3.0	23.15	48.0	3.9	37.87	39.3	3.8	7.53	34.3
4.1	27.90	57.7	4.0	23.27	47.7	4.9	38.54	39.1	4.8	8.65	34.2
5.0	27.47	57.5	5.0	23.37	47.4	5.9	39.25	38.8	5.8	9.85	34.1
6.0	27.01	57.2	6.0	23.48	47.1	6.9	40.03	38.5	6.8	11.07	34.1
7.0	26.52	56.9	7.0	23.63	46.8	7.9	40.88	38.3	7.8	12.30	34.0
8.0	26.00	56.6	8.0	23.86	46.4	8.9	41.79	38.0	8.8	13.51	34.0
9.0	25.47	56.3	8.9	24.15	46.0	9.9	42.77	37.8	9.8	14.66	34.0
10.0	24.97	56.0	9.9	24.52	45.7	10.9	43.76	37.6	10.8	15.76	34.0
11.0	24.52	55.6	10.9	24.96	45.3	11.9	44.76	37.4	11.8	16.80	34.0
12.0	24.14	55.3	11.9	25.45	45.0	12.9	45.74	37.2	12.8	17.80	34.0
13.0	23.84	54.9	12.9	25.97	44.7	13.9	46.69	37.1	13.8	18.78	34.0
14.0	23.61	54.6	13.9	26.50	44.4	14.9	47.59	36.9	14.8	19.76	34.0
15.0	23.45	54.2	14.9	26.99	44.2	15.9	48.44	36.8	15.8	20.76	34.0
16.0	23.34	53.9	15.9	27.45	43.9	16.8	49.26	36.6	16.8	21.83	33.9
17.0	23.24	53.6	16.9	27.88	43.7	17.8	50.10	36.4	17.8	22.95	33.9
18.0	23.13	53.3	17.9	28.28	43.4	18.8	50.95	36.3	18.8	24.10	33.9
19.0	23.00	53.0	18.9	28.68	43.1	19.8	51.87	36.1	19.8	25.31	33.9
20.0	22.83	52.7	19.9	29.09	42.8	20.8	52.84	35.9	20.8	26.52	34.0
21.0	22.64	52.4	20.9	29.55	42.5	21.8	53.87	35.7	21.7	27.73	34.0
22.0	22.41	52.0	21.9	30.08	42.1	22.8	54.97	35.5	22.7	28.90	34.1
23.0	22.21	51.7	22.9	30.68	41.8	23.8	56.11	35.4	23.7	30.01	34.2
24.0	22.04	51.4	23.9	31.34	41.5	24.8	57.27	35.2	24.7	31.07	34.3
25.0	21.92	51.0	24.9	32.08	41.2	25.8	58.41	35.1	25.7	32.06	34.4
26.0	21.89	50.6	25.9	32.86	40.9	26.8	59.51	35.1	26.7	33.01	34.4
27.0	21.93	50.3	26.9	33.65	40.7	27.8	60.58	35.0	27.7	33.94	34.5
28.0	22.05	49.9	27.9	34.43	40.5	28.8	61.60	34.9	28.7	34.88	34.6
29.0	22.23	49.5	28.9	35.20	40.2	29.8	62.56	34.8	29.7	35.84	34.6
30.0	22.41	49.2	29.9	35.91	40.0	30.8	63.51	34.7	30.7	36.86	34.7
31.0	22.63	48.9	30.9	36.59	39.8	31.8	64.45	34.6	31.7	37.92	34.7
32.0	22.83	48.6	31.9	37.22	39.6	32.8	65.42	34.5	32.7	39.03	34.8

APPARENT PLACES OF λ URSÆ MINORIS, FOR THE UPPER TRANSIT
AT WASHINGTON.

Mean Solar Date.	MAY.		Mean Solar Date.	JUNE.		Mean Solar Date.	JULY.		Mean Solar Date.	AUGUST.	
	Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.
	^h ^m 19 56	[°] ['] 88 54		^h ^m 19 57	[°] ['] 88 54		^h ^m 19 57	[°] ['] 88 54		^h ^m 19 56	[°] ['] 88 54
1.7	37.92	34.7	1.6	5.28	40.2	1.6	17.55	49.0	1.5	72.13	59.2
2.7	39.03	34.8	2.6	6.01	40.5	2.6	17.61	49.3	2.5	71.55	59.5
3.7	40.17	34.9	3.6	6.69	40.8	3.6	17.61	49.7	3.5	71.00	59.8
4.7	41.31	35.0	4.6	7.30	41.0	4.6	17.57	50.0	4.5	70.48	60.1
5.7	42.43	35.1	5.6	7.85	41.3	5.5	17.50	50.3	5.5	70.00	60.4
6.7	43.50	35.3	6.6	8.32	41.6	6.5	17.44	50.6	6.5	69.56	60.6
7.7	44.51	35.5	7.6	8.77	41.9	7.5	17.42	50.9	7.5	69.14	61.0
8.7	45.45	35.6	8.6	9.21	42.1	8.5	17.43	51.2	8.5	68.71	61.3
9.7	46.33	35.8	9.6	9.66	42.4	9.5	17.47	51.5	9.4	68.24	61.6
10.7	47.17	36.0	10.6	10.15	42.6	10.5	17.55	51.8	10.4	67.69	62.0
11.7	47.98	36.1	11.6	10.67	42.8	11.5	17.63	52.1	11.4	67.08	62.3
12.7	48.82	36.2	12.6	11.24	43.1	12.5	17.67	52.4	12.4	66.41	62.6
13.7	49.68	36.3	13.6	11.83	43.3	13.5	17.67	52.8	13.4	65.66	63.0
14.7	50.58	36.5	14.6	12.40	43.6	14.5	17.61	53.2	14.4	64.87	63.3
15.7	51.53	36.6	15.6	12.95	44.0	15.5	17.47	53.6	15.4	64.06	63.6
16.7	52.51	36.8	16.6	13.44	44.3	16.5	17.27	53.9	16.4	63.25	63.9
17.7	53.51	36.9	17.6	13.86	44.6	17.5	16.99	54.3	17.4	62.48	64.1
18.7	54.51	37.1	18.6	14.21	45.0	18.5	16.69	54.6	18.4	61.74	64.4
19.7	55.48	37.3	19.6	14.48	45.3	19.5	16.37	54.9	19.4	61.03	64.6
20.7	56.38	37.6	20.6	14.71	45.6	20.5	16.06	55.2	20.4	60.38	64.9
21.7	57.21	37.8	21.6	14.91	45.9	21.5	15.78	55.5	21.4	59.73	65.2
22.7	57.97	38.1	22.6	15.11	46.2	22.5	15.54	55.8	22.4	59.07	65.5
23.7	58.66	38.3	23.6	15.35	46.4	23.5	15.34	56.1	23.4	58.36	65.8
24.7	59.32	38.5	24.6	15.61	46.7	24.5	15.17	56.4	24.4	57.59	66.1
25.7	59.98	38.7	25.6	15.89	47.0	25.5	14.98	56.7	25.4	56.74	66.4
26.7	60.64	38.9	26.6	16.23	47.3	26.5	14.76	57.1	26.4	55.82	66.7
27.7	61.33	39.1	27.6	16.56	47.6	27.5	14.48	57.5	27.4	54.84	67.0
28.6	62.07	39.3	28.6	16.89	47.9	28.5	14.14	57.8	28.4	53.83	67.3
29.6	62.85	39.5	29.6	17.18	48.3	29.5	13.72	58.2	29.4	52.81	67.6
30.6	63.67	39.7	30.6	17.40	48.6	30.5	13.23	58.5	30.4	51.80	67.8
31.6	64.49	39.9	31.6	17.55	49.0	31.5	12.60	58.9	31.4	50.84	68.0
32.6	65.28	40.2	32.6	17.61	49.3	32.5	12.13	59.2	32.4	49.93	68.2

APPARENT PLACES OF λ URSÆ MINORIS, FOR THE UPPER TRANSIT
AT WASHINGTON.

Mean Solar Date.	SEPTEMBER.		Mean Solar Date.	OCTOBER.		Mean Solar Date.	NOVEMBER.		Mean Solar Date.	DECEMBER.	
	Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.
	^h ^m 19 56	[°] ['] 88 55		^h ^m 19 55	[°] ['] 88 55		^h ^m 19 54	[°] ['] 88 55		^h ^m 19 54	[°] ['] 88 55
1.4	49.93	8.2	1.3	76.65	14.3	1.2	96.22	16.3	1.1	59.04	13.4
2.4	49.04	8.5	2.3	75.52	14.4	2.2	94.87	16.3	2.1	57.84	13.2
3.4	48.20	8.7	3.3	74.37	14.6	3.2	93.46	16.3	3.1	56.65	13.0
4.4	47.34	9.0	4.3	73.15	14.7	4.2	92.03	16.3	4.1	55.49	12.8
5.4	46.46	9.2	5.3	71.87	14.9	5.2	90.59	16.3	5.1	54.41	12.5
6.4	45.54	9.5	6.3	70.54	15.1	6.2	89.17	16.2	6.1	53.40	12.3
7.4	44.55	9.8	7.3	69.15	15.2	7.2	87.81	16.1	7.1	52.46	12.1
8.4	43.50	10.0	8.3	67.73	15.3	8.2	86.49	16.0	8.1	51.58	11.8
9.4	42.38	10.3	9.3	66.31	15.4	9.2	85.23	15.9	9.1	50.71	11.6
10.4	41.23	10.6	10.3	64.91	15.5	10.2	84.03	15.8	10.1	49.86	11.4
11.4	40.04	10.8	11.3	63.56	15.5	11.2	82.86	15.8	11.1	48.99	11.2
12.4	38.85	11.0	12.3	62.26	15.6	12.2	81.71	15.7	12.1	48.08	11.1
13.4	37.67	11.2	13.3	61.01	15.6	13.2	80.55	15.6	13.1	47.13	10.9
14.3	36.55	11.3	14.3	59.80	15.7	14.2	79.35	15.6	14.1	46.14	10.6
15.3	35.48	11.5	15.3	58.60	15.7	15.2	78.10	15.5	15.1	45.13	10.4
16.3	34.44	11.7	16.3	57.39	15.8	16.2	76.80	15.5	16.1	44.14	10.2
17.3	33.43	11.9	17.3	56.15	15.9	17.2	75.46	15.4	17.1	43.17	9.9
18.3	32.42	12.1	18.3	54.86	16.0	18.2	74.11	15.3	18.1	42.27	9.6
19.3	31.38	12.3	19.3	53.51	16.1	19.2	72.75	15.2	19.1	41.43	9.3
20.3	30.28	12.5	20.3	52.12	16.2	20.2	71.43	15.0	20.1	40.66	9.0
21.3	29.13	12.7	21.2	50.66	16.3	21.2	70.17	14.9	21.1	39.97	8.7
22.3	27.91	13.0	22.2	49.20	16.3	22.2	68.97	14.7	22.1	39.33	8.5
23.3	26.63	13.2	23.2	47.75	16.3	23.2	67.83	14.5	23.1	38.72	8.2
24.3	25.31	13.3	24.2	46.32	16.3	24.2	66.77	14.4	24.1	38.10	7.9
25.3	23.95	13.5	25.2	44.96	16.3	25.2	65.73	14.2	25.1	37.46	7.7
26.3	22.64	13.6	26.2	43.64	16.3	26.1	64.69	14.1	26.1	36.80	7.4
27.3	21.36	13.8	27.2	42.39	16.3	27.1	63.63	13.9	27.1	36.10	7.2
28.3	20.13	13.9	28.2	41.18	16.2	28.1	62.55	13.8	28.1	35.35	6.9
29.3	18.94	14.0	29.2	39.97	16.3	29.1	61.42	13.7	29.1	34.60	6.6
30.3	17.78	14.1	30.2	38.77	16.3	30.1	60.25	13.5	30.1	33.87	6.3
31.3	16.65	14.3	31.2	37.52	16.3	31.1	59.04	13.4	31.1	33.18	6.0
32.3	15.52	14.4	32.2	36.22	16.3	32.1	57.84	13.2	32.1	32.57	5.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	21 Cassiopeæ.		A Cassiopeæ.		50 Cassiopeæ.		4 Cassiopeæ.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h 0 ^m 36	[°] 74 ['] 15	^h 1 ^m 21	[°] 69 ['] 34	^h 1 ^m 52	[°] 71 ['] 46	^h 2 ^m 18	[°] 66 ['] 48
Jan. 1.3	60.34 -72	71.0 +0.1	28.67 -51	74.8 +0.6	15.41 -54	60.5 +1.1	15.51 -36	32.1 +1.2
11.2	59.61 -72	70.9 -0.6	28.14 -53	75.1 0.0	14.85 -56	61.3 +0.6	15.11 -42	33.1 0.7
21.2	58.90 -70	70.1 1.1	27.60 -54	74.8 -0.6	14.24 -51	61.5 -0.1	14.66 -46	33.5 +0.2
31.2	58.22 -68	68.7 1.6	27.07 -52	74.0 1.1	13.62 -52	61.1 0.7	14.19 -47	33.4 -0.4
Feb. 10.2	57.61 -57	66.9 2.1	26.55 -49	72.6 1.6	13.01 -56	60.2 1.2	13.71 -47	32.8 0.9
20.1	57.08 -47	64.5 2.6	26.09 -43	70.8 2.0	12.44 -54	58.7 1.7	13.24 -45	31.6 1.4
Mar. 1.1	56.66 -38	61.9 3.8	25.68 -36	68.6 2.4	11.92 -47	56.8 2.1	12.81 -40	30.0 1.8
11.1	56.38 -21	59.0 3.0	25.37 -26	66.0 2.6	11.50 -37	54.5 2.4	12.44 -33	28.0 2.1
21.1	56.23 -07	55.9 3.0	25.16 -15	63.3 2.8	11.17 -26	51.9 2.7	12.14 -25	25.7 2.4
31.0	56.24 +00	52.9 3.0	25.06 -04	60.4 2.8	10.97 -14	49.2 2.8	11.94 -16	23.2 2.6
April 10.0	56.40 -24	50.0 3.8	25.08 +08	57.6 2.7	10.90 -01	46.3 2.8	11.83 -05	20.6 2.6
20.0	56.72 -37	47.4 2.6	25.23 +20	55.0 2.6	10.96 +13	43.6 2.7	11.83 +06	18.0 2.5
29.9	57.17 -51	45.0 2.1	25.49 +32	52.5 2.3	11.16 +26	41.0 2.6	11.94 +16	15.5 2.4
May 9.9	57.74 -63	43.1 1.7	25.86 +42	50.4 1.9	11.49 +38	38.6 2.2	12.16 +27	13.2 2.2
19.9	58.42 -72	41.7 1.2	26.33 +51	48.7 1.6	11.93 +50	36.6 1.8	12.47 +36	11.2 1.8
29.9	59.19 -79	40.7 0.7	26.88 +59	47.4 1.0	12.48 +59	35.0 1.4	12.88 +45	9.5 1.5
June 8.8	60.01 -84	40.3 -0.1	27.50 +65	46.7 -0.5	13.11 +67	33.8 0.9	13.37 +52	8.3 1.0
18.8	60.87 -86	40.5 +0.4	28.17 +68	46.4 0.0	13.82 +73	33.1 -0.4	13.92 +57	7.4 0.6
28.8	61.73 -86	41.2 1.0	28.87 +70	46.7 +0.5	14.57 +77	32.9 +0.1	14.52 +61	7.1 -0.2
July 8.7	62.59 -84	42.5 1.6	29.58 +71	47.4 1.0	15.35 +78	33.2 0.5	15.15 +64	7.1 +0.3
18.7	63.42 -80	44.2 2.0	30.28 +69	48.7 1.5	16.14 +78	33.9 1.0	15.80 +66	7.7 0.8
28.7	64.19 -74	46.4 2.4	30.96 +66	50.4 1.9	16.92 +77	35.2 1.5	16.45 +64	8.7 1.2
Aug. 7.7	64.89 -66	49.0 3.8	31.60 +62	52.5 2.3	17.67 +73	36.9 1.9	17.09 +62	10.1 1.6
17.6	65.51 -57	51.9 3.1	32.19 +56	55.0 2.6	18.38 +68	39.0 2.3	17.69 +60	11.9 2.0
27.6	66.03 -47	55.1 3.3	32.73 +49	57.8 2.9	19.04 +62	41.5 2.6	18.27 +56	14.1 2.3
Sept. 6.6	66.45 -36	58.5 3.6	33.18 +42	60.8 3.1	19.62 +55	44.3 2.9	18.79 +50	16.6 2.6
16.6	66.76 -25	62.1 3.8	33.56 +34	64.1 3.3	20.13 +47	47.3 3.1	19.27 +44	19.3 2.8
26.5	66.95 -13	65.7 3.6	33.86 +25	67.4 3.4	20.56 +38	50.5 3.3	19.67 +37	22.2 3.0
Oct. 6.5	67.03 +02	69.3 3.6	34.07 +17	70.9 3.4	20.89 +28	53.9 3.4	20.01 +30	25.3 3.1
16.5	66.99 -10	72.9 3.6	34.19 +07	74.3 3.4	21.12 +18	57.3 3.4	20.28 +23	28.4 3.2
26.5	66.83 -21	76.3 3.3	34.22 -02	77.6 3.3	21.26 +08	60.7 3.3	20.47 +15	31.6 3.1
Nov. 5.4	66.56 -33	79.4 3.0	34.16 -11	80.8 3.1	21.29 -02	64.0 3.2	20.58 +07	34.7 3.1
15.4	66.19 -43	82.2 2.6	34.01 -19	83.7 2.6	21.21 -13	67.1 3.0	20.60 -02	37.7 2.9
25.4	65.71 -52	84.6 2.2	33.77 -28	86.4 2.4	21.03 -23	70.0 2.7	20.54 -10	40.5 2.7
Dec. 5.3	65.15 -60	86.6 1.7	33.46 -35	88.6 2.0	20.75 -33	72.6 2.4	20.40 -18	43.1 2.4
15.3	64.52 -66	88.0 1.1	33.07 -43	90.4 1.5	20.37 -42	74.8 1.9	20.17 -26	45.3 2.0
25.3	63.84 -70	88.8 +0.5	32.61 -48	91.7 1.0	19.92 -50	76.4 1.4	19.87 -33	47.0 1.6
35.3	63.12 -72	89.1 -0.1	32.11 -52	92.4 +0.5	19.38 -57	77.6 +0.9	19.50 -39	48.4 +1.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	48 Cephei.		α Camelopardalis.		Groombridge 966.		22 Camelopardalis (H).	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h 3	^m 3	^h 4	^m 40	^h 5	^m 22	^h 6	^m 4
	^s 77	^s 14	^s 66	^s 6	^s 74	^s 56	^s 69	^s 21
Jan. 1.4	45.17 -01	48.8 +2.0	59.30 -10	49.2 +2.4	10.07 -06	55.6 +2.9	20.59 +10	32.6 +2.7
11.4	44.49 -73	50.6 1.6	59.15 -19	51.5 2.1	9.93 -23	58.4 2.6	20.63 -03	35.3 2.6
21.4	43.70 -83	51.8 1.0	58.90 -29	53.4 1.7	9.63 -37	60.9 2.4	20.53 -13	37.8 2.4
31.3	42.83 -89	52.5 +0.4	58.57 -36	54.9 1.4	9.18 -51	63.1 2.0	20.32 -27	40.1 2.2
Feb. 10.3	41.92 -91	52.6 -0.2	58.17 -43	56.1 0.9	8.61 -52	64.9 1.6	19.99 -37	42.1 1.6
20.3	41.00 -90	52.1 0.8	57.72 -46	56.7 +0.4	7.94 -71	66.2 1.1	19.57 -45	43.8 1.4
Mar. 1.3	40.11 -86	51.1 1.3	57.24 -48	56.9 -0.1	7.19 -76	67.0 +0.3	19.08 -52	45.1 1.0
11.2	39.30 -76	49.5 1.8	56.76 -47	56.6 0.6	6.42 -78	67.3 0.0	18.54 -58	45.8 +0.6
21.2	38.60 -63	47.5 2.2	56.29 -44	55.8 1.0	5.64 -76	67.0 -0.6	17.98 -56	46.1 0.0
31.2	38.04 -48	45.2 2.5	55.87 -40	54.5 1.4	4.90 -71	66.2 1.1	17.43 -54	45.8 -0.6
April 10.1	37.64 -31	42.5 2.7	55.50 -33	53.0 1.7	4.23 -62	64.9 1.5	16.90 -50	45.1 0.9
20.1	37.42 -18	39.7 2.8	55.21 -24	51.1 2.0	3.65 -51	63.2 1.9	16.44 -43	44.0 1.4
30.1	37.38 +06	36.9 2.8	55.02 -15	49.0 2.2	3.20 -36	61.1 2.2	16.04 -35	42.4 1.7
May 10.1	37.54 -25	34.2 2.6	54.92 -06	46.7 2.3	2.89 -24	58.8 2.4	15.74 -26	40.5 2.0
20.0	37.88 -43	31.6 2.5	54.93 +06	44.4 2.3	2.72 -09	56.3 2.6	15.54 -14	38.4 2.2
30.0	38.39 -59	29.2 2.2	55.04 -16	42.1 2.2	2.71 +07	53.6 2.6	15.45 -03	36.1 2.4
June 9.0	39.06 -74	27.2 1.9	55.25 -26	39.9 2.1	2.86 -22	51.0 2.0	15.47 +08	33.7 2.4
19.0	39.87 -86	25.5 1.5	55.56 -35	37.9 1.9	3.15 -37	48.5 2.5	15.60 -18	31.3 2.4
28.9	40.78 -96	24.2 1.0	55.95 -43	36.1 1.6	3.59 -50	46.1 2.3	15.84 -29	28.9 2.3
July 8.9	41.79 1.04	23.4 0.6	56.41 -50	34.6 1.4	4.15 -52	43.9 2.1	16.19 -39	26.6 2.2
18.9	42.86 1.09	23.1 -0.1	56.94 -55	33.4 1.0	4.83 -73	41.9 1.8	16.62 -48	24.5 2.0
28.8	43.96 1.11	23.3 +0.4	57.52 -60	32.5 0.7	5.61 -82	40.3 1.5	17.14 -54	22.6 1.8
Aug. 7.8	45.08 1.11	23.9 0.9	58.14 -62	32.0 -0.3	6.48 -89	39.0 1.1	17.72 -52	21.0 1.6
17.8	46.19 1.09	25.0 1.3	58.78 -65	31.9 0.0	7.40 -96	38.0 0.7	18.37 -57	19.6 1.2
27.8	47.27 1.05	26.5 1.7	59.44 -66	32.1 +0.4	8.37 -99	37.5 -0.3	19.06 -71	18.5 0.9
Sept. 6.7	48.29 -99	28.4 2.1	60.10 -65	32.6 0.7	9.38 1.01	37.3 0.0	19.79 -74	17.8 0.6
16.7	49.25 -91	30.7 2.4	60.75 -64	33.5 1.1	10.39 1.01	37.6 +0.4	20.54 -76	17.4 -0.2
26.7	50.12 -82	33.3 2.7	61.38 -62	34.7 1.4	11.40 1.00	38.2 0.8	21.31 -77	17.3 +0.2
Oct. 6.7	50.88 -70	36.2 3.0	61.98 -58	36.3 1.7	12.39 -96	39.3 1.2	22.07 -76	17.7 0.5
16.6	51.53 -58	39.3 2.2	62.55 -54	38.1 1.9	13.33 -91	40.7 1.6	22.82 -74	18.4 0.9
26.6	52.04 -44	42.5 2.3	63.07 -49	40.2 2.1	14.21 -84	42.5 1.9	23.55 -70	19.5 1.2
Nov. 5.6	52.41 -29	45.9 2.4	63.53 -42	42.5 2.4	15.02 -76	44.6 2.3	24.23 -66	20.9 1.6
15.6	52.61 +13	49.2 2.3	63.91 -35	44.9 2.5	15.72 -64	47.0 2.5	24.86 -59	22.6 1.9
25.5	52.66 -04	52.5 2.2	64.22 -26	47.5 2.6	16.31 -52	49.7 2.7	25.41 -51	24.7 2.2
Dec. 15.5	52.53 -21	55.6 2.0	64.44 -17	50.2 2.7	16.76 -37	52.5 2.9	25.87 -40	27.0 2.4
15.5	52.24 -27	58.5 2.7	64.56 +07	52.8 2.6	17.05 -22	55.4 3.0	26.23 -30	29.5 2.5
25.4	51.79 -32	61.1 2.3	64.57 -03	55.4 2.5	17.19 +05	58.4 2.9	26.47 -18	32.1 2.6
35.4	51.19 -56	63.2 +1.9	64.49 -13	57.8 +2.3	17.16 -11	61.3 +2.8	26.59 +06	34.8 +2.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	51 Cephei (H).		Piazzi vii. 67.		3 Ursæ Majoris (H).		♂ Ursæ Majoris.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h ^m 6 37	[°] ['] 87 14	^h ^m 7 17	[°] ['] 68 43	^h ^m 7 59	[°] ['] 68 51	^h ^m 8 58	[°] ['] 67 39
Jan. 1.5	64.24 +.84	20.9 +2.3	9.66 +.29	37.4 +2.4	40.53 +.40	16.2 +2.2	45.68 +.51	44.8 +1.7
11.5	64.61 -.10	24.2 2.2	9.89 -.17	39.9 2.6	40.87 .38	18.6 2.5	46.13 .41	46.7 2.1
21.5	64.05 1.01	27.4 2.1	10.00 +.04	42.6 2.6	41.08 .15	21.1 2.6	46.48 .29	48.9 2.4
31.5	62.60 1.87	30.5 2.9	9.97 -.09	45.2 2.6	41.17 +.02	23.8 2.7	46.71 .17	51.4 2.6
Feb. 10.4	60.33 2.65	33.2 2.6	9.82 .21	47.7 2.4	41.12 -.11	26.4 2.6	46.82 +.05	54.0 2.7
20.4	57.33 2.32	35.6 2.1	9.58 .31	50.0 2.1	40.96 .32	29.0 2.4	46.81 -.07	56.7 2.7
Mar. 1.4	53.74 2.64	37.5 1.6	9.19 .40	51.9 1.8	40.68 .33	31.3 2.2	46.68 .18	59.4 2.6
11.3	49.71 4.18	38.9 1.0	8.75 .47	53.5 1.4	40.31 .41	33.3 1.8	46.44 .28	61.8 2.3
21.3	45.44 4.34	39.6 +0.5	8.25 .51	54.7 0.9	39.86 .47	35.0 1.4	46.11 .26	64.0 2.0
31.3	41.08 4.34	39.8 -0.1	7.73 .58	55.4 +0.4	39.36 .51	36.2 1.0	45.72 .42	65.9 1.7
April 10.3	36.79 4.19	39.4 0.7	7.19 .52	55.6 0.0	38.94 .52	36.9 +0.5	45.28 .46	67.3 1.2
20.2	32.76 2.64	38.3 1.3	6.68 .49	55.3 -0.5	38.32 .51	37.2 0.0	44.80 .47	68.3 0.7
30.2	29.15 2.39	36.8 1.8	6.21 .44	54.6 1.0	37.82 .48	36.9 -0.5	44.33 .47	68.8 +0.3
May 10.2	26.05 2.79	34.8 2.2	5.81 .37	53.4 1.4	37.36 .43	36.2 0.9	43.86 .45	68.8 -0.2
20.2	23.61 2.11	32.4 2.6	5.47 .29	51.8 1.7	36.97 .36	35.1 1.4	43.43 .41	68.3 0.7
30.1	21.85 1.33	29.7 2.8	5.23 .20	49.9 2.0	36.64 .28	33.5 1.7	43.05 .35	67.4 1.2
June 9.1	20.87 -.61	26.8 2.0	5.08 -.10	47.8 2.2	36.40 .19	31.6 2.0	42.73 .29	66.0 1.5
19.1	20.64 +.17	23.8 2.0	5.04 .00	45.4 2.4	36.26 -.10	29.5 2.3	42.48 .21	64.3 1.9
29.0	21.22 .97	20.7 2.1	5.09 +.10	43.0 2.5	36.21 .00	27.1 2.5	42.30 .13	62.2 2.2
July 9.0	22.56 1.72	17.7 2.0	5.25 .20	40.5 2.5	36.25 +.09	24.5 2.6	42.21 -.06	59.8 2.5
19.0	24.64 2.41	14.8 2.6	5.50 .29	38.0 2.5	36.39 .18	21.9 2.6	42.20 +.03	57.3 2.6
29.0	27.37 2.03	12.1 2.6	5.84 .28	35.5 2.4	36.62 .28	19.2 2.6	42.27 .11	54.6 2.8
Aug. 7.9	30.73 2.66	9.6 2.3	6.26 .46	33.2 2.3	36.94 .26	16.6 2.6	42.42 .20	51.8 2.6
17.9	34.66 4.17	7.4 2.0	6.75 .53	31.0 2.1	37.34 .44	14.1 2.6	42.66 .28	48.9 2.8
27.9	39.03 4.68	5.6 1.6	7.32 .59	29.0 1.9	37.82 .51	11.6 2.3	42.97 .35	46.1 2.8
Sept. 6.9	43.79 4.92	4.1 1.2	7.94 .65	27.3 1.6	38.36 .58	9.4 2.1	43.36 .42	43.3 2.7
16.8	48.84 5.16	3.1 0.8	8.61 .69	25.8 1.3	38.97 .63	7.4 1.9	43.82 .49	40.6 2.6
26.8	54.07 5.29	2.5 -0.3	9.32 .72	24.7 1.0	39.63 .68	5.6 1.6	44.35 .56	38.2 2.3
Oct. 6.8	59.39 5.32	2.4 +0.1	10.05 .74	23.9 0.6	40.33 .72	4.2 1.2	44.93 .61	35.9 2.1
16.7	64.68 5.25	2.7 0.6	10.80 .75	23.5 -0.2	41.07 .76	3.1 0.9	45.57 .66	34.0 1.8
26.7	69.86 5.07	3.6 1.1	11.56 .75	23.4 +0.2	41.82 .76	2.4 0.5	46.26 .69	32.4 1.4
Nov. 5.7	74.77 4.74	4.9 1.6	12.30 .73	23.8 0.6	42.59 .76	2.2 -0.1	46.96 .73	31.2 1.0
15.7	79.30 4.28	6.7 2.0	13.02 .69	24.6 1.0	43.34 .74	2.3 +0.4	47.68 .73	30.4 -0.5
25.6	83.30 2.72	8.9 2.4	13.69 .64	25.7 1.4	44.06 .70	2.9 0.8	48.41 .71	30.1 0.0
Dec. 5.6	86.70 2.05	11.5 2.8	14.29 .56	27.3 1.8	44.74 .64	4.0 1.3	49.11 .68	30.4 +0.5
15.6	89.36 2.26	14.4 2.0	14.92 .47	29.2 2.1	45.35 .57	5.4 1.7	49.78 .63	31.1 0.9
25.6	91.20 1.42	17.5 2.2	15.24 .37	31.4 2.3	45.87 .47	7.3 2.0	50.38 .56	32.2 1.4
35.5	92.17 +0.52	20.8 +2.3	15.55 +.26	33.9 +2.5	46.29 +.25	9.5 +2.3	50.90 +.47	33.9 +1.9

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	1 Draconis (H).		24 Ursæ Majoris (d).		39 Ursæ Majoris.		9 Draconis (H).	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h ^m 9 17	81° 53'	^h ^m 9 22	70° 23'	^h ^m 10 8	65° 45'	^h ^m 10 23	76° 22'
Jan. 1.6	65.12 +1.30	63.7 +2.0	46.64 +.61	71.0 +1.6	25.26 +.58	36.9 +0.8	48.19 +.06	70.2 +1.0
11.6	66.30 1.05	65.9 2.4	47.20 .50	72.8 2.0	25.80 .50	38.0 1.4	49.10 .68	71.5 1.6
21.6	67.22 .77	68.6 2.8	47.64 .88	75.0 2.3	26.26 .41	39.6 1.8	49.89 .72	73.4 2.1
31.5	67.85 .47	71.5 3.0	47.96 .28	77.5 2.6	26.63 .32	41.6 2.2	50.53 .58	75.6 2.5
Feb. 10.5	68.16 +.15	74.5 2.1	48.14 +.11	80.2 2.8	26.89 .21	44.0 2.6	51.00 .88	78.3 2.8
20.5	68.15 -.16	77.6 2.1	48.19 -.02	83.0 2.8	27.04 +.10	46.6 2.7	51.28 +.19	81.2 3.0
Mar. 1.5	67.84 .46	80.7 2.0	48.10 .15	85.8 2.7	27.08 -.01	49.3 2.7	51.38 .00	84.2 2.0
11.4	67.24 .73	83.6 2.7	47.88 .27	88.5 2.6	27.02 .11	52.1 2.7	51.29 -.18	87.2 2.0
21.4	66.39 .96	86.1 2.4	47.56 .87	90.9 2.3	26.85 .21	54.7 2.6	51.03 .84	90.1 2.8
31.4	65.33 1.14	88.3 1.9	47.15 .44	93.0 1.9	26.60 .08	57.1 2.3	50.61 .48	92.8 2.5
April 10.4	64.10 1.29	90.0 1.4	46.67 .50	94.7 1.6	26.29 .24	59.3 2.0	50.06 .80	95.2 2.1
20.3	62.78 1.33	91.1 0.9	46.15 .53	96.0 1.0	25.92 .39	61.0 1.6	49.42 .68	97.1 1.7
30.3	61.40 1.38	91.7 +0.3	45.61 .51	96.8 +0.5	25.52 .41	62.4 1.1	48.69 .75	98.6 1.2
May 10.3	60.02 1.34	91.8 -0.3	45.08 .58	97.1 0.0	25.10 .42	63.2 0.6	47.93 .77	99.6 0.7
20.2	58.69 1.28	91.2 0.8	44.56 .49	96.8 -0.5	24.69 .41	63.6 +0.1	47.14 .77	100.0 +0.1
30.2	57.46 1.18	90.2 1.3	44.09 .44	96.1 1.0	24.29 .38	63.5 -0.3	46.38 .76	99.9 -0.4
June 9.2	56.37 1.01	88.6 1.8	43.68 .28	94.9 1.4	23.92 .35	62.9 0.8	45.65 .70	99.2 0.9
19.2	55.45 .68	86.6 2.2	43.33 .21	93.2 1.8	23.59 .20	61.9 1.3	44.98 .63	98.0 1.4
29.1	54.71 .03	84.2 2.6	43.06 .23	91.2 2.2	23.32 .23	60.4 1.7	44.39 .54	96.3 1.9
July 9.1	54.19 .41	81.4 2.9	42.89 .18	88.9 2.5	23.10 .19	58.5 2.0	43.89 .44	94.2 2.3
19.1	53.89 -.16	78.4 3.1	42.80 -.04	86.3 2.7	22.94 .12	56.3 2.4	43.51 .33	91.8 2.6
29.1	53.83 +.05	75.2 2.2	42.80 +.05	83.5 2.9	22.85 -.06	53.8 2.6	43.23 .21	89.0 2.9
Aug. 8.0	53.99 .28	71.9 2.3	42.89 .14	80.5 3.0	22.83 +.01	51.1 2.8	43.08 -.09	85.9 3.2
18.0	54.39 .51	68.6 2.3	43.08 .28	77.5 3.0	22.88 .07	48.1 3.0	43.06 +.04	82.6 3.3
28.0	55.01 .73	65.3 2.3	43.36 .32	74.5 3.0	23.00 .16	45.1 3.1	43.16 .17	79.3 3.4
Sept. 6.9	55.85 .94	62.1 2.2	43.78 .41	71.4 3.0	23.19 .23	41.9 3.1	43.40 .20	75.8 3.5
16.9	56.89 1.14	59.0 2.0	44.18 .49	68.5 2.8	23.46 .21	38.8 3.1	43.77 .43	72.4 3.4
26.9	58.13 1.32	56.1 2.7	44.71 .57	65.8 2.6	23.81 .28	35.7 3.0	44.27 .66	69.0 3.3
Oct. 6.9	59.53 1.48	53.6 2.4	45.32 .64	63.2 2.4	24.22 .45	32.8 2.8	44.89 .69	65.8 2.1
16.8	61.08 1.61	51.4 2.0	45.99 .70	61.0 2.1	24.70 .51	30.0 2.6	45.63 .80	62.8 2.8
26.8	62.75 1.71	49.6 1.6	46.72 .78	59.0 1.7	25.24 .57	27.5 2.3	46.48 .90	60.1 2.5
Nov. 5.8	64.51 1.78	48.3 1.1	47.49 .79	57.5 1.3	25.83 .61	25.3 2.0	47.43 .98	57.8 2.1
15.8	66.31 1.81	47.5 -0.5	48.29 .81	56.5 0.8	26.46 .68	23.5 1.8	48.45 1.08	55.9 1.6
25.7	68.13 1.79	47.3 0.0	49.10 .81	55.9 -0.3	27.13 .67	22.2 1.1	49.52 1.09	54.5 1.1
Dec. 5.7	69.90 1.72	47.6 +0.6	49.90 .78	55.8 +0.1	27.80 .67	21.4 -0.6	50.62 1.10	53.7 -0.5
15.7	71.57 1.60	48.5 1.3	50.67 .74	56.3 0.7	28.47 .63	21.1 0.0	51.72 1.07	53.5 +0.1
25.6	73.11 1.44	49.9 1.7	51.37 .67	57.3 1.2	29.10 .61	21.3 +0.5	52.77 1.02	53.8 0.7
35.6	74.45 +1.22	51.9 +2.2	52.00 +.58	58.8 +1.7	29.69 +.56	22.1 +1.0	53.76 +.04	54.8 +1.2

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	λ Draconis.		4 Draconis (H).		α Draconis.		32 Camelop. (foll.)	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h 11 ^m 23	[°] 70 ['] 2	^h 12 ^m 5	[°] 78 ['] 20	^h 12 ^m 27	[°] 70 ['] 30	^h 12 ^m 47	[°] 84 ['] 7
Jan. 1.7	31.32 +.75	74.3 0.0	56.77 +1.21	40.6 -0.4	48.32 +.77	40.7 -0.9	65.12 +2.24	32.2 -0.8
11.7	32.05 -.70	74.7 +0.6	57.97 1.17	40.6 +0.2	49.08 -.76	40.1 -0.2	67.39 2.28	31.7 -0.1
21.7	32.71 -.63	75.6 1.2	59.11 1.09	41.2 0.9	49.83 -.72	40.3 +0.5	69.63 2.19	31.9 +0.5
31.6	33.30 -.53	77.1 1.7	60.16 -.98	42.5 1.6	50.52 -.68	41.0 1.1	71.77 2.05	32.8 1.2
Feb. 10.6	33.78 -.43	79.1 2.2	61.07 -.83	44.3 2.1	51.13 -.57	42.4 1.6	73.72 1.82	34.3 1.7
20.6	34.15 -.31	81.5 2.6	61.82 -.65	46.7 2.5	51.66 -.47	44.3 2.1	75.41 1.84	36.3 2.3
Mar. 1.6	34.40 -.18	84.2 2.8	62.38 -.46	49.3 2.8	52.07 -.36	46.7 2.5	76.79 1.21	38.8 2.6
11.5	34.51 +.06	87.1 2.9	62.74 -.26	52.3 3.0	52.37 -.23	49.4 2.8	77.81 -.84	41.6 2.9
21.5	34.50 -.07	90.1 2.9	62.89 +.06	55.4 3.1	52.54 +.11	52.3 3.0	78.44 -.42	44.6 3.1
31.5	34.38 -.18	93.0 2.8	62.84 -.15	58.6 3.1	52.59 -.01	55.4 3.0	78.68 +.04	47.8 3.2
April 10.4	34.15 -.28	95.8 2.6	62.60 -.33	61.6 2.9	52.52 -.12	58.4 3.0	78.51 -.36	51.0 3.1
20.4	33.83 -.36	98.3 2.3	62.18 -.49	64.4 2.7	52.34 -.22	61.3 2.8	77.97 -.72	54.0 2.9
30.4	33.44 -.42	100.4 1.9	61.61 -.64	67.0 2.3	52.07 -.31	64.0 2.6	77.08 1.06	56.8 2.6
May 10.4	32.99 -.47	102.1 1.5	60.91 -.76	69.1 1.9	51.72 -.39	66.3 2.2	75.88 1.24	59.2 2.2
20.3	32.51 -.49	103.4 1.0	60.11 -.88	70.7 1.4	51.30 -.44	68.3 1.7	74.43 1.57	61.3 1.8
30.3	32.01 -.50	104.1 +0.5	59.24 -.89	71.8 0.9	50.83 -.49	69.8 1.3	72.76 1.78	62.8 1.3
June 9.3	31.51 -.50	104.3 -0.1	58.33 -.92	72.4 +0.3	50.33 -.51	70.8 0.8	70.95 1.87	63.9 0.8
19.3	31.02 -.48	104.0 0.6	57.41 -.92	72.5 -0.2	49.81 -.52	71.3 +0.2	69.04 1.94	64.3 +0.2
29.2	30.55 -.44	103.2 1.1	56.50 -.89	72.0 0.8	49.28 -.52	71.2 -0.3	67.09 1.96	64.3 -0.3
July 9.2	30.13 -.40	101.8 1.6	55.63 -.84	70.9 1.3	48.77 -.50	70.7 0.6	65.14 1.91	63.6 0.9
19.2	29.76 -.34	100.1 2.0	54.81 -.78	69.4 1.8	48.28 -.47	69.6 1.3	63.26 1.84	62.5 1.4
29.1	29.44 -.28	97.9 2.4	54.07 -.69	67.3 2.3	47.82 -.43	68.0 1.8	61.47 1.72	60.8 1.9
Aug. 8.1	29.20 -.21	95.3 2.7	53.43 -.59	64.9 2.7	47.41 -.38	65.9 2.3	59.83 1.56	58.6 2.4
18.1	29.02 -.13	92.4 3.0	52.90 -.47	62.0 3.0	47.06 -.32	63.5 2.7	58.37 1.35	56.0 2.8
28.1	28.93 -.06	89.3 3.2	52.49 -.34	58.9 3.3	46.78 -.28	60.6 3.0	57.13 1.18	53.1 3.1
Sept. 7.0	28.92 +.04	85.9 3.4	52.22 -.20	55.4 3.5	46.56 -.17	57.5 3.3	56.13 -.87	49.8 3.4
17.0	29.00 -.13	82.4 3.5	52.10 -.06	51.8 3.7	46.44 -.09	54.1 3.6	55.40 -.59	46.3 3.6
27.0	29.18 -.22	78.9 3.5	52.13 +.11	48.1 3.8	46.41 +.02	50.5 3.6	54.96 -.28	42.5 3.8
Oct. 7.0	29.45 -.32	75.3 3.5	52.33 -.28	44.3 3.8	46.47 -.13	46.8 3.7	54.84 +.04	38.7 3.6
16.9	29.81 -.41	71.9 3.4	52.69 -.44	40.6 3.7	46.64 -.22	43.1 3.7	55.04 -.37	34.9 3.8
26.9	30.27 -.50	68.6 3.2	53.21 -.61	37.0 3.5	46.92 -.33	39.4 3.6	55.58 -.70	31.1 3.7
Nov. 5.9	30.82 -.59	65.5 2.9	53.90 -.76	33.6 3.2	47.30 -.42	35.8 3.5	56.45 1.04	27.5 3.5
15.8	31.45 -.66	62.9 2.5	54.74 -.90	30.5 2.9	47.78 -.52	32.5 3.2	57.65 1.26	24.1 3.2
25.8	32.14 -.73	60.6 2.0	55.71 1.03	27.8 2.5	48.36 -.59	29.4 2.8	59.16 1.04	21.0 2.8
Dec. 5.8	32.88 -.78	58.8 1.5	56.79 1.12	25.6 2.0	49.01 -.69	26.8 2.4	60.93 1.09	18.4 2.4
15.8	33.65 -.77	57.5 1.0	57.96 1.19	23.9 1.4	49.73 -.74	24.7 1.8	62.93 2.06	16.3 1.8
25.7	34.43 -.77	56.8 -0.4	59.17 1.22	22.8 0.7	50.49 -.77	23.2 1.3	65.09 2.22	14.8 1.2
35.7	35.18 +.74	56.8 +0.2	60.39 +1.21	22.4 -0.1	51.27 +.78	22.2 -0.6	67.35 +2.26	13.9 -0.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Draconis.		δ Ursæ Minoris.		β Ursæ Minoris.		γ Ursæ Minoris.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h 14 ^m 0	[°] 64 ['] 59	^h 14 ^m 27	[°] 76 ['] 16	^h 14 ^m 51	[°] 74 ['] 41	^h 15 ^m 20	[°] 72 ['] 17
Jan. 1.8	46.62 +.87	73.7 -2.1	45.74 +.87	46.0 -2.2	2.80 +.78	31.4 -2.6	53.47 +.58	66.8 -2.9
11.8	47.20 -.80	71.8 1.6	46.66 -.85	44.0 1.7	3.58 -.82	29.1 2.0	54.10 -.67	64.2 2.4
21.8	47.81 -.61	70.6 0.9	47.63 -.99	42.6 1.0	4.44 -.88	27.5 1.4	54.81 -.74	62.1 1.6
31.7	48.42 -.59	70.0 -0.2	48.64 1.00	41.9 -0.4	5.33 -.90	26.4 -0.7	55.57 -.78	60.6 1.2
Feb. 10.7	49.00 -.56	70.1 +0.4	49.63 -.97	41.9 +0.3	6.24 -.89	26.0 0.0	56.36 -.78	59.7 -0.6
20.7	49.54 -.82	70.8 1.0	50.59 -.91	42.5 1.0	7.12 -.88	26.3 +0.7	57.15 -.77	59.6 +0.2
Mar. 1.7	50.03 -.45	72.2 1.6	51.46 -.82	43.8 1.6	7.94 -.79	27.3 1.3	57.90 -.78	60.1 0.9
11.6	50.44 -.38	74.1 2.1	52.23 -.71	45.6 2.1	8.69 -.99	28.8 1.8	58.60 -.68	61.3 1.6
21.6	50.78 -.29	76.4 2.5	52.88 -.57	48.0 2.5	9.33 -.86	30.9 2.3	59.22 -.58	63.1 2.0
31.6	51.03 -.20	79.1 2.8	53.38 -.43	50.7 2.9	9.85 -.44	33.5 2.7	59.75 -.48	65.3 2.6
April 10.6	51.18 -.12	82.0 3.0	53.72 -.26	53.7 3.1	10.24 -.32	36.3 3.0	60.18 -.37	68.0 2.8
20.5	51.26 +.03	85.1 3.1	53.89 +.10	56.8 3.2	10.48 -.17	39.4 3.1	60.48 -.25	71.0 3.1
30.5	51.25 -.06	88.2 3.0	53.91 -.06	60.0 3.1	10.58 +.08	42.6 3.2	60.67 +.12	74.1 3.2
May 10.5	51.15 -.13	91.1 2.9	53.77 -.22	63.1 3.0	10.54 -.11	45.8 3.1	60.73 -.00	77.3 3.2
20.4	50.98 -.20	93.9 2.6	53.48 -.36	66.0 2.8	10.36 -.24	48.8 2.9	60.67 -.12	80.5 3.1
30.4	50.74 -.27	96.4 2.3	53.06 -.48	68.7 2.6	10.06 -.36	51.7 2.7	60.50 -.28	83.5 2.9
June 9.4	50.45 -.32	98.5 1.9	52.52 -.59	71.0 2.1	9.64 -.47	54.2 2.3	60.22 -.33	86.3 2.6
19.4	50.11 -.36	100.2 1.5	51.87 -.68	72.9 1.6	9.11 -.57	56.3 1.9	59.84 -.42	88.8 2.3
29.3	49.73 -.39	101.4 1.0	51.15 -.76	74.3 1.1	8.50 -.66	58.0 1.5	59.37 -.51	90.8 1.9
July 9.3	49.32 -.43	102.1 +0.5	50.36 -.81	75.1 0.6	7.82 -.71	59.3 1.0	58.82 -.57	92.5 1.4
19.3	48.89 -.48	102.3 -0.1	49.53 -.86	75.5 +0.1	7.09 -.76	60.0 +0.6	58.22 -.63	93.6 0.9
29.3	48.46 -.43	102.0 0.6	48.67 -.80	75.3 -0.4	6.32 -.78	60.2 -0.1	57.57 -.67	94.3 +0.4
Aug. 8.2	48.03 -.43	101.2 1.1	47.80 -.85	74.6 1.0	5.54 -.79	59.8 0.6	56.89 -.69	94.4 -0.1
18.2	47.62 -.40	99.8 1.6	46.96 -.83	73.4 1.5	4.75 -.78	58.9 1.1	56.19 -.70	94.0 0.7
28.2	47.23 -.37	98.0 2.0	46.15 -.78	71.7 2.0	3.99 -.76	57.6 1.6	55.49 -.69	93.1 1.2
Sept. 7.1	46.88 -.38	95.7 2.5	45.40 -.71	69.5 2.4	3.26 -.70	55.7 2.1	54.82 -.66	91.7 1.7
17.1	46.57 -.27	93.1 2.9	44.72 -.63	66.9 2.8	2.59 -.63	53.4 2.5	54.18 -.61	89.7 2.1
27.1	46.33 -.21	90.0 3.3	44.14 -.52	63.9 3.2	2.00 -.54	50.6 2.9	53.60 -.54	87.4 2.6
Oct. 7.1	46.16 -.18	86.7 3.5	43.67 -.40	60.6 3.4	1.50 -.44	47.5 3.3	53.09 -.46	84.6 3.0
17.0	46.06 -.08	83.1 3.7	43.34 -.26	57.0 3.7	1.12 -.32	44.1 3.5	52.67 -.37	81.5 3.3
27.0	46.06 +.04	79.4 3.8	43.15 -.11	53.2 3.8	0.86 -.19	40.5 3.7	52.36 -.25	78.0 3.6
Nov. 6.0	46.14 -.14	75.5 3.8	43.12 +.06	49.4 3.9	0.75 -.04	36.7 3.8	52.17 -.13	74.3 3.7
16.0	46.33 -.28	71.7 3.8	43.26 -.22	45.5 3.8	0.79 +.11	32.8 3.8	52.11 +.01	70.5 3.8
25.9	46.60 -.32	68.0 3.6	43.56 -.38	41.8 3.7	0.97 -.27	29.0 3.8	52.18 -.14	66.7 3.8
Dec. 5.9	46.97 -.41	64.6 3.3	44.02 -.54	38.2 3.4	1.32 -.41	25.3 3.6	52.39 -.28	62.9 3.7
15.9	47.42 -.48	61.4 3.0	44.64 -.68	34.9 3.1	1.80 -.56	21.8 3.3	52.74 -.41	59.3 3.5
25.8	47.94 -.54	58.6 2.5	45.39 -.81	32.0 2.6	2.42 -.67	18.7 2.9	53.20 -.52	55.9 3.2
35.8	48.50 +.58	56.4 -2.0	46.25 +.91	29.7 -2.1	3.15 +.77	16.1 -2.4	53.78 +.62	52.9 -2.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ζ Ursæ Minoris.		Groombridge 2320.		15 Draconis (A).		ω Draconis.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h 15 48	^m 78 11	^h 16 5	^m 68 9	^h 16 28	^m 69 2	^h 17 37	^m 68 48
Jan. 1.9	43.80 +.73	51.9 -2.0	54.62 +.40	25.6 -2.8	11.47 +.36	71.4 -2.4	39.89 +.16	69.0 -2.6
11.9	44.60 .86	49.1 2.6	55.08 .49	22.5 2.0	11.88 .48	68.1 2.0	40.13 .39	65.4 2.4
21.9	45.53 .99	46.8 2.0	55.61 .56	19.9 2.4	12.39 .54	65.3 2.6	40.48 .89	62.1 2.1
31.8	46.57 1.07	45.0 1.4	56.19 .61	17.8 1.9	12.96 .60	63.0 2.0	40.92 .46	59.2 2.7
Feb. 10.8	47.67 1.12	43.9 0.8	56.82 .64	16.3 1.1	13.59 .64	61.3 1.4	41.44 .55	56.7 2.2
20.8	48.80 1.12	43.5 -0.1	57.47 .68	15.5 -0.6	14.25 .66	60.2 0.7	42.02 .60	54.8 1.6
Mar. 1.7	49.91 1.09	43.7 +0.6	58.11 .63	15.4 +0.2	14.92 .66	59.8 -0.1	42.64 .64	53.5 0.9
11.7	50.97 1.02	44.6 1.2	58.73 .60	16.0 0.9	15.57 .64	60.1 +0.6	43.29 .66	52.9 -0.3
21.7	51.94 .91	46.1 1.8	59.31 .58	17.2 1.6	16.19 .69	61.0 1.3	43.93 .64	53.0 +0.4
31.7	52.79 .77	48.1 2.3	59.82 .48	18.9 2.0	16.76 .63	62.6 1.8	44.56 .61	53.7 1.0
April 10.6	53.49 .62	50.6 2.7	60.27 .40	21.2 2.6	17.26 .46	64.7 2.3	45.15 .86	55.0 1.6
20.6	54.03 .45	53.4 2.9	60.63 .32	23.9 2.8	17.67 .37	67.2 2.7	45.69 .60	56.9 2.2
30.6	54.39 .27	56.5 2.1	60.90 .22	26.9 2.1	18.00 .28	70.1 2.0	46.15 .42	59.3 2.6
May 10.5	54.56 +.08	59.7 2.2	61.07 .13	30.1 2.2	18.24 .18	73.2 2.2	46.54 .24	62.1 2.9
20.5	54.55 -.10	62.9 2.2	61.15 +.08	33.3 2.2	18.37 +.06	76.4 2.2	46.84 .25	65.2 2.2
30.5	54.36 .28	66.0 2.0	61.13 -.07	36.5 2.2	18.40 -.02	79.7 2.2	47.04 .16	68.4 2.3
June 9.5	53.99 .45	68.9 2.8	61.01 .16	39.6 2.0	18.32 .12	82.9 2.1	47.13 +.06	71.8 2.3
19.4	53.47 .60	71.6 2.6	60.81 .26	42.5 2.7	18.15 .22	85.9 2.9	47.13 -.06	75.1 2.3
29.4	52.80 .73	73.9 2.1	60.52 .38	45.0 2.4	17.89 .31	88.6 2.6	47.02 .16	78.3 2.1
July 9.4	52.00 .86	75.8 1.7	60.15 .40	47.2 2.0	17.54 .39	91.1 2.2	46.81 .25	81.4 2.9
19.4	51.09 .96	77.2 1.2	59.71 .46	49.0 1.6	17.11 .46	93.1 1.9	46.51 .34	84.1 2.6
29.3	50.10 1.02	78.2 0.7	59.22 .51	50.3 1.1	16.62 .52	94.7 1.4	46.13 .43	86.6 2.2
Aug. 8.3	49.05 1.07	78.6 +0.2	58.69 .55	51.2 0.6	16.07 .57	95.8 0.9	45.66 .60	88.6 1.8
18.3	47.96 1.10	78.5 -0.3	58.12 .56	51.5 +0.1	15.48 .60	96.4 +0.4	45.13 .56	90.2 1.4
28.3	46.86 1.09	78.0 0.8	57.54 .59	51.3 -0.6	14.87 .62	96.6 -0.2	44.55 .60	91.4 0.9
Sept. 7.2	45.77 1.07	76.9 1.4	56.95 .58	50.5 1.0	14.24 .62	96.1 1.7	43.93 .63	92.0 +0.4
17.2	44.73 1.02	75.3 1.8	56.38 .56	49.3 1.5	13.62 .61	95.2 1.2	43.29 .64	92.1 -0.1
27.2	43.74 .88	73.2 2.3	55.84 .52	47.5 2.0	13.03 .66	93.8 1.7	42.65 .64	91.7 0.7
Oct. 7.1	42.86 .83	70.7 2.7	55.34 .48	45.3 2.4	12.47 .63	91.8 2.2	42.01 .61	90.8 1.2
17.1	42.09 .70	67.8 2.1	54.91 .39	42.7 2.6	11.97 .66	89.4 2.6	41.42 .57	89.4 1.7
27.1	41.46 .54	64.6 2.4	54.56 .31	39.6 2.2	11.55 .68	86.6 2.0	40.87 .61	87.4 2.2
Nov. 6.1	41.00 .37	61.1 2.6	54.30 .21	36.3 2.6	11.22 .68	83.5 2.3	40.40 .42	85.0 2.6
16.0	40.72 -.18	57.4 2.7	54.14 -.10	32.7 2.7	10.99 .67	80.0 2.6	40.00 .34	82.2 2.0
26.0	40.63 +.02	53.6 2.8	54.09 +.01	28.9 2.8	10.87 -.06	76.3 2.7	39.71 .24	79.0 2.2
Dec. 6.0	40.77 .22	49.8 2.7	54.16 .13	25.1 2.6	10.88 +.06	72.5 2.6	39.53 .12	75.5 2.6
16.0	41.09 .42	46.1 2.6	54.34 .24	21.3 2.7	11.00 .18	68.7 2.1	39.46 -.01	71.9 2.7
25.9	41.61 .61	42.7 2.3	54.64 .35	17.7 2.3	11.24 .20	65.0 2.6	39.51 +.11	68.1 2.7
35.9	42.31 +.77	39.6 2.9	55.04 +.44	14.3 2.1	11.60 +.40	61.6 2.3	39.68 +.22	64.5 2.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ψ^1 Draconis (pr.).		50 Draconis.		δ Draconis.		τ Draconis.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h 17 44	^m 72 12	^h 18 50	^m 75 16	^h 19 12	^m 67 25	^h 19 17	^m 73 6
Jan. 2.0	13.15 +18	50.2 -2.6	32.30 -07	44.0 -2.6	27.98 -06	54.9 -3.5	60.64 -14	44.1 -2.4
12.0	13.39 +31	46.6 2.5	32.31 +10	40.5 2.6	27.97 +06	51.4 2.6	60.57 +41	40.6 2.5
21.9	13.76 +49	43.2 2.2	32.49 +26	36.9 2.4	28.08 -15	47.8 2.5	60.65 +15	37.1 2.5
31.9	14.25 +64	40.3 2.8	32.83 +41	33.6 2.2	28.28 -26	44.4 2.3	60.87 +29	33.6 2.3
Feb. 10.9	14.83 +89	37.7 2.2	33.32 +56	30.6 2.5	28.59 -35	41.2 2.0	61.23 +42	30.4 2.0
20.9	15.50 +69	35.7 1.7	33.94 +87	27.9 2.4	28.98 -42	38.4 2.6	61.71 +58	27.6 2.6
Mar. 1.8	16.22 +73	34.4 1.0	34.66 +77	25.8 1.8	29.45 -50	36.1 2.0	62.29 +66	25.2 2.1
11.8	16.96 +75	33.7 -0.4	35.47 +88	24.3 1.2	29.97 -55	34.4 1.4	62.95 +70	23.4 1.5
21.8	17.72 +75	33.7 +0.3	36.33 +87	23.4 -0.6	30.55 -59	33.3 0.8	63.68 +75	22.1 0.9
31.8	18.45 +71	34.3 0.0	37.22 +86	23.1 +0.1	31.14 -60	32.8 -0.1	64.45 +77	21.5 -0.3
April 10.7	19.15 +68	35.5 1.5	38.10 +86	23.6 0.7	31.75 -60	33.0 +0.5	65.23 +77	21.6 +0.4
20.7	19.78 +59	37.4 2.1	38.94 +82	24.6 1.3	32.35 -58	33.8 1.1	66.00 +75	22.3 1.0
30.7	20.33 +50	39.7 2.8	39.73 +74	26.2 1.0	32.91 -56	35.2 1.7	66.73 +70	23.6 1.6
May 10.6	20.79 +40	42.4 2.9	40.43 +65	28.4 2.4	33.44 -50	37.2 2.2	67.40 +68	25.5 2.1
20.6	21.14 +29	45.4 2.1	41.03 +54	30.9 2.7	33.90 -48	39.6 2.6	68.00 +55	27.9 2.6
30.6	21.37 +19	48.6 2.3	41.51 +41	33.8 2.0	34.30 -35	42.5 2.0	68.50 +45	30.6 2.9
June 9.6	21.49 +05	51.9 2.3	41.85 +27	37.0 2.2	34.61 -27	45.6 2.2	68.89 +32	33.7 2.2
19.5	21.48 -07	55.3 2.3	42.05 +13	40.3 2.4	34.83 -17	48.9 2.4	69.16 +21	37.0 2.4
29.5	21.35 -19	58.5 2.1	42.11 -02	43.7 2.4	34.96 +08	52.4 2.5	69.31 +08	40.4 2.4
July 9.5	21.10 -30	61.5 2.9	42.01 -17	47.1 2.3	34.99 -02	55.9 2.4	69.33 -08	43.9 2.4
19.5	20.74 +41	64.3 2.6	41.77 +31	50.4 2.2	34.92 +12	59.2 2.2	69.21 +18	47.3 2.2
29.4	20.28 +51	66.8 2.3	41.39 +44	53.4 2.9	34.75 +22	62.5 2.1	68.98 +30	50.5 2.2
Aug. 8.4	19.73 +60	68.9 1.9	40.88 +57	56.3 2.7	34.49 +30	65.5 2.9	68.62 +42	53.6 2.9
18.4	19.09 +66	70.6 1.4	40.25 +68	59.8 2.3	34.14 +39	68.2 2.6	68.15 +52	56.4 2.6
28.3	18.40 +72	71.8 1.0	39.52 +77	60.9 1.9	33.72 +46	70.6 2.2	67.58 +61	58.9 2.2
Sept. 7.3	17.66 +76	72.5 +0.5	38.71 +85	62.6 1.5	33.23 +52	72.6 1.8	66.92 +69	60.9 1.9
17.3	16.89 +77	72.7 -0.1	37.82 +90	63.8 1.0	32.69 +56	74.1 1.3	66.19 +76	62.6 1.4
27.3	16.11 +77	72.4 0.6	36.90 +94	64.6 +0.5	32.11 +59	75.2 0.8	65.42 +79	63.8 0.9
Oct. 7.2	15.35 +74	71.5 1.1	35.95 +94	64.8 0.6	31.51 +60	75.7 +0.3	64.61 +81	64.4 +0.4
17.2	14.63 +70	70.2 1.6	35.01 +98	64.5 -0.6	30.91 +60	75.7 -0.3	63.80 +81	64.5 -0.2
27.2	13.96 +68	68.3 2.1	34.10 +90	63.7 1.1	30.32 +57	75.1 0.6	62.99 +79	64.1 0.7
Nov. 6.2	13.36 +54	65.9 2.6	33.24 +83	62.3 1.7	29.77 +58	74.0 1.4	62.22 +74	63.1 1.3
16.1	12.87 +44	63.2 2.0	32.46 +73	60.4 2.1	29.26 +58	72.3 1.9	61.51 +67	61.6 1.8
26.1	12.48 +32	60.0 2.3	31.79 +62	58.0 2.6	28.81 +41	70.2 2.4	60.88 +56	59.5 2.3
Dec. 6.1	12.23 +19	56.6 2.8	31.23 +48	55.2 2.0	28.44 +32	67.5 2.8	60.34 +48	57.0 2.7
16.0	12.10 -05	53.0 2.7	30.82 +33	52.0 2.3	28.17 +29	64.5 2.3	59.92 +36	54.1 2.1
26.0	12.12 +09	49.3 2.7	30.57 +17	48.6 2.5	27.99 +13	61.2 2.4	59.63 +22	50.8 2.3
36.0	12.27 +22	45.6 -2.6	30.48 -01	45.1 -2.6	27.91 -02	57.7 -3.6	59.47 -08	47.4 -2.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	♌ Draconis.		♉ Cephei.		Groombridge 3241.		12 Yr. Catal. 1879.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h 19 48	[°] 69 55	^h 20 13	[°] 77 18	^h 20 30	[°] 72 4	^h 20 53	[°] 80 3
Jan. 2.1	33.28 -17	64.8 -3.3	12.88 -43	57.7 -3.1	30.35 -32	77.8 -3.0	25.05 -76	35.1 -2.7
12.0	33.16 -06	61.4 3.5	12.53 -26	54.5 3.3	30.08 -20	74.7 3.3	24.39 -56	32.2 3.0
22.0	33.16 +06	57.9 3.5	12.36 -07	51.1 3.4	29.94 -07	71.3 3.4	23.94 -33	29.0 3.3
Feb. 1.0	33.23 -18	54.4 3.4	12.39 +12	47.6 3.4	29.94 +06	67.8 3.4	23.72 -09	25.7 3.4
10.9	33.52 -29	51.1 3.3	12.59 -20	44.2 3.3	30.06 -19	64.4 3.3	23.75 +15	22.3 3.4
20.9	33.86 -39	48.1 3.8	12.99 -48	41.1 3.0	30.31 -31	61.2 3.1	24.02 -38	19.0 3.2
Mar. 1.9	34.30 -48	45.4 3.4	13.56 -64	38.2 3.6	30.68 -43	58.2 3.7	24.52 -61	15.9 3.9
11.9	34.82 -58	43.3 1.9	14.27 -77	35.8 3.2	31.16 -53	55.7 3.3	25.23 -60	13.1 3.6
21.8	35.41 -61	41.7 1.3	15.10 -87	33.9 1.6	31.74 -61	53.7 1.8	26.13 -97	10.8 3.1
31.8	36.05 -66	40.8 -0.6	16.02 -96	32.6 1.0	32.39 -66	52.2 1.2	27.17 1-10	9.0 1.5
April 10.8	36.71 -67	40.5 0.0	17.00 -99	31.9 -0.4	33.09 -72	51.4 -0.5	28.33 1-20	7.7 0.9
20.8	37.38 -68	40.8 +0.7	18.00 1-00	31.8 +0.3	33.82 -73	51.1 +0.1	29.56 1-25	7.1 -0.3
30.7	38.03 -64	41.8 1.3	19.01 -98	32.4 0.9	34.56 -73	51.6 0.7	30.82 1-25	7.1 +0.3
May 10.7	38.66 -60	43.4 1.8	19.97 -98	33.6 1.5	35.28 -70	52.6 1.3	32.07 1-22	7.7 0.9
20.7	39.22 -54	45.5 3.3	20.85 -84	35.3 2.0	35.97 -66	54.2 1.9	33.26 1-15	9.0 1.5
30.6	39.73 -46	48.0 3.7	21.65 -74	37.6 3.4	36.59 -59	56.4 2.4	34.37 1-04	10.7 3.0
June 9.6	40.14 -37	50.9 3.1	22.33 -61	40.2 3.8	37.14 -51	59.0 3.8	35.35 -91	13.0 3.6
19.6	40.47 -27	54.1 3.3	22.86 -46	43.2 3.1	37.60 -41	61.9 3.1	36.18 -74	15.6 3.8
29.6	40.69 -17	57.5 3.4	23.25 -31	46.4 3.3	37.95 -30	65.1 3.3	36.84 -56	18.6 3.1
July 9.5	40.81 +06	61.0 3.5	23.47 +14	49.9 3.5	38.20 -18	68.5 3.5	37.31 -37	21.9 3.4
19.5	40.81 -05	64.5 3.5	23.53 -03	53.4 3.5	38.32 +06	72.1 3.6	37.57 +16	25.4 3.5
29.5	40.71 -16	67.9 3.4	23.42 -19	56.9 3.5	38.32 -06	75.6 3.5	37.63 -04	28.9 3.6
Aug. 8.4	40.50 -26	71.2 3.2	23.14 -36	60.3 3.3	38.20 -17	79.2 3.4	37.49 -25	32.5 3.5
18.4	40.19 -36	74.3 2.9	22.71 -51	63.5 3.3	37.97 -29	82.5 3.3	37.13 -45	36.0 3.4
28.4	39.78 -45	77.1 2.8	22.13 -65	66.6 3.9	37.62 -39	85.7 3.0	36.59 -64	39.3 3.3
Sept. 7.4	39.29 -52	79.5 3.2	21.41 -77	69.3 3.6	37.18 -49	88.6 3.7	35.86 -81	42.4 3.0
17.3	38.74 -58	81.5 1.8	20.59 -88	71.7 3.2	36.64 -57	91.2 3.4	34.97 -96	45.3 3.7
27.3	38.12 -63	83.1 1.3	19.66 -96	73.7 1.8	36.03 -64	93.3 1.9	33.94 1-10	47.8 3.3
Oct. 7.3	37.48 -66	84.2 0.8	18.66 1-02	75.2 1.3	35.36 -69	95.0 1.5	32.78 1-20	50.0 1.9
17.3	36.81 -67	84.8 +0.3	17.62 1-06	76.3 0.8	34.65 -72	96.3 1.0	31.53 1-28	51.6 1.4
27.2	36.14 -66	84.8 -0.3	16.55 1-07	76.8 +0.2	33.92 -73	97.0 +0.4	30.22 1-32	52.8 0.9
Nov. 6.2	35.49 -63	84.2 0.8	15.48 1-05	76.7 -0.4	33.19 -73	97.1 -0.2	28.87 1-35	53.4 +0.3
16.2	34.87 -59	83.1 1.4	14.45 1-01	76.1 0.9	32.47 -70	96.6 0.8	27.53 1-33	53.4 -0.3
26.1	34.31 -52	81.4 1.9	13.48 -98	74.8 1.6	31.79 -65	95.6 1.3	26.22 1-27	52.9 0.8
Dec. 6.1	33.83 -44	79.3 2.4	12.60 -82	73.1 2.0	31.17 -58	94.0 1.9	24.99 1-18	51.7 1.4
16.1	33.43 -35	76.6 3.8	11.83 -69	70.8 3.5	30.63 -50	91.9 2.3	23.87 1-06	50.0 3.0
26.1	33.12 -26	73.6 3.2	11.21 -54	68.1 3.9	30.17 -40	89.3 3.8	22.89 -89	47.8 3.4
36.0	32.93 -14	70.3 -3.4	10.75 -38	65.0 -3.3	29.83 -29	86.3 -3.2	22.09 -69	45.2 -2.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Cephei.		11 Cephei.		79 Draconis.		226 Cephei (B).	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h 21 ^m 26	[°] 69 ['] 58	^h 21 ^m 39	[°] 70 ['] 42	^h 21 ^m 51	[°] 73 ['] 4	^h 22 ^m 29	[°] 75 ['] 32
Jan. 2.1	54.97 -39	68.5 -2.5	57.11 -44	29.7 -2.3	11.91 -54	57.1 -2.2	55.82 -72	63.7 -1.7
12.1	54.62 -31	65.8 2.0	56.71 -35	27.2 2.7	11.42 -44	54.7 2.6	55.14 -83	61.8 2.1
22.1	54.36 -30	62.8 3.1	56.41 -24	24.3 3.0	11.04 -33	51.9 3.0	54.57 -51	59.4 2.6
Feb. 1.0	54.21 -09	59.5 3.3	56.21 -14	21.1 3.2	10.77 -20	48.8 3.2	54.11 -38	56.6 2.9
11.0	54.18 +02	56.2 3.3	56.13 -02	17.8 3.3	10.63 -07	45.5 3.3	53.80 -23	53.5 3.2
21.0	54.25 -14	52.8 3.2	56.18 +10	14.5 3.3	10.63 +07	42.2 3.3	53.65 -08	50.2 3.3
Mar. 2.0	54.45 -25	49.7 3.0	56.34 -22	11.3 3.1	10.77 -31	39.0 3.1	53.65 +09	47.0 3.2
11.9	54.75 -36	46.8 2.7	56.62 -34	8.3 2.8	11.05 -34	35.9 2.9	53.82 -23	43.8 3.1
21.9	55.16 -45	44.3 2.3	57.01 -44	5.7 2.4	11.45 -46	33.2 2.5	54.15 -40	40.8 2.8
31.9	55.66 -53	42.3 1.7	57.50 -53	3.5 1.9	11.97 -57	30.9 2.0	54.63 -54	38.2 2.4
April 10.9	56.22 -60	40.8 1.3	58.06 -60	1.9 1.3	12.58 -66	29.1 1.6	55.23 -66	36.0 1.9
20.8	56.85 -64	39.9 -0.6	58.69 -65	0.9 0.7	13.27 -72	27.9 0.9	55.95 -76	34.3 1.4
30.8	57.51 -67	39.7 +0.1	59.37 -69	0.5 -0.1	14.02 -76	27.3 -0.3	56.76 -84	33.2 0.8
May 10.8	58.19 -67	40.1 0.7	60.06 -70	0.7 +0.5	14.80 -78	27.3 +0.3	57.62 -88	32.7 -0.2
20.7	58.85 -66	41.1 1.3	60.76 -69	1.5 1.1	15.58 -77	28.0 0.9	58.52 -90	32.8 +0.4
30.7	59.50 -62	42.6 1.6	61.44 -66	2.9 1.7	16.34 -74	29.2 1.5	59.42 -89	33.4 1.0
June 9.7	60.10 -57	44.7 2.3	62.07 -61	4.8 2.2	17.06 -69	30.9 2.0	60.30 -86	34.7 1.5
19.7	60.63 -50	47.2 2.7	62.65 -54	7.2 2.6	17.73 -62	33.2 2.5	61.13 -79	36.5 2.0
29.6	61.10 -42	50.1 3.1	63.15 -46	10.0 3.0	18.31 -54	35.9 2.9	61.89 -72	38.8 2.5
July 9.6	61.47 -33	53.3 3.3	63.57 -37	13.1 3.3	18.80 -44	38.9 3.2	62.56 -62	41.5 2.9
19.6	61.75 -23	56.7 3.5	63.89 -27	16.5 3.5	19.18 -32	42.2 3.4	63.12 -50	44.5 3.2
29.6	61.92 -12	60.3 3.6	64.10 -16	20.1 3.6	19.45 -21	45.7 3.6	63.56 -38	47.8 3.4
Aug. 8.5	61.99 +01	63.9 3.6	64.21 +03	23.7 3.6	19.59 +09	49.3 3.7	63.87 -24	51.3 3.6
18.5	61.94 -09	67.5 3.6	64.21 -06	27.3 3.6	19.62 -04	53.0 3.6	64.05 +11	55.0 3.7
28.5	61.80 -19	71.0 3.4	64.09 -16	30.9 3.6	19.52 -16	56.6 3.6	64.08 -08	58.7 3.7
Sept. 7.4	61.56 -29	74.4 3.2	63.88 -26	34.3 3.3	19.31 -27	60.1 3.4	63.99 -17	62.4 3.6
17.4	61.22 -38	77.5 2.9	63.57 -36	37.6 3.1	18.98 -38	63.5 3.2	63.76 -29	66.0 3.5
27.4	60.80 -45	80.3 2.6	63.17 -44	40.5 2.7	18.56 -47	66.5 2.9	63.40 -41	69.3 3.3
Oct. 7.4	60.32 -52	82.7 2.2	62.69 -51	43.0 2.4	18.04 -56	69.2 2.6	62.93 -52	72.5 3.0
17.3	59.77 -56	84.6 1.7	62.15 -56	45.2 1.9	17.45 -62	71.6 2.1	62.35 -62	75.3 2.6
27.3	59.19 -60	86.1 1.2	61.57 -60	46.8 1.4	16.80 -68	73.4 1.6	61.69 -70	77.7 2.2
Nov. 6.3	58.58 -62	87.0 0.7	60.95 -63	48.0 0.9	16.10 -71	74.8 1.1	60.95 -77	79.6 1.7
16.3	57.95 -62	87.4 +0.1	60.31 -64	48.6 +0.3	15.38 -73	75.6 +0.5	60.16 -81	81.0 1.1
26.2	57.34 -60	87.2 -0.5	59.68 -63	48.6 -0.3	14.65 -72	75.8 -0.1	59.32 -84	81.8 +0.5
Dec. 6.2	56.75 -57	86.4 1.1	59.06 -60	47.9 0.9	13.93 -70	75.4 0.7	58.48 -84	82.1 -0.1
16.2	56.21 -52	85.0 1.7	58.48 -55	46.7 1.5	13.25 -66	74.4 1.3	57.65 -81	81.7 0.7
26.1	55.72 -45	83.0 2.2	57.95 -49	45.0 2.0	12.62 -59	72.8 1.6	56.86 -76	80.7 1.3
36.1	55.31 -36	80.6 -2.6	57.50 -41	42.7 -2.5	12.07 -50	70.7 -2.3	56.13 -68	79.1 -1.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Cephei.		ο Cephei.		γ Cephei.		Groombridge 4163.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h ^m 22 44	[°] ['] 65 30	^h ^m 23 13	[°] ['] 67 23	^h ^m 23 33	[°] ['] 76 53	^h ^m 23 48	[°] ['] 73 40
Jan. 2.2	58.57 -40	39.5 -1.6	12.78 -47	37.6 -1.8	57.52 -87	61.9 -0.7	26.98 -89	49.0 -8.6
12.2	58.19 -86	37.7 2.1	12.34 -49	36.1 1.7	56.66 -82	60.9 1.8	26.30 -86	48.1 1.2
22.1	57.86 -80	35.4 2.8	11.94 -37	34.1 2.2	55.87 -74	59.2 1.9	25.66 -61	46.6 1.6
Feb. 1.1	57.60 -29	32.7 2.8	11.60 -30	31.7 2.6	55.18 -68	57.1 2.4	25.08 -58	44.5 2.2
11.1	57.41 -14	29.7 2.0	11.33 -22	29.0 2.9	54.60 -50	54.5 2.7	24.60 -42	42.1 2.6
21.1	57.31 -05	26.6 2.1	11.16 -13	26.0 2.0	54.18 -34	51.6 2.0	24.23 -21	39.3 2.9
Mar. 2.0	57.31 +04	23.5 2.1	11.08 -03	22.9 2.1	53.92 -17	48.5 2.1	23.99 -17	36.3 2.1
12.0	57.40 -14	20.4 2.9	11.10 +08	19.8 2.0	53.83 +01	45.3 2.2	23.88 -08	33.2 2.1
22.0	57.58 -28	17.6 2.7	11.23 -18	16.8 2.8	53.93 -19	42.2 2.0	23.92 +11	30.1 2.0
31.9	57.86 -32	15.1 2.3	11.46 -28	14.1 2.5	54.20 -36	39.2 2.6	24.11 -20	27.1 2.8
April 10.9	58.22 -40	13.0 1.8	11.79 -37	11.8 2.1	54.65 -82	36.6 2.6	24.44 -39	24.4 2.5
20.9	58.66 -47	11.4 1.3	12.21 -45	9.9 1.6	55.25 -67	34.3 2.1	24.89 -42	22.1 2.1
30.9	59.15 -52	10.3 0.7	12.70 -52	8.6 1.1	55.98 -79	32.4 1.6	25.47 -62	20.2 1.6
May 10.8	59.69 -56	9.9 -0.2	13.25 -57	7.7 -0.6	56.83 -88	31.1 1.0	26.14 -71	18.8 1.1
20.8	60.26 -58	10.0 +0.4	13.85 -51	7.5 0.0	57.76 -96	30.4 -0.5	26.88 -77	18.0 -0.6
30.8	60.85 -58	10.7 1.0	14.47 -52	7.8 +0.6	58.73 -99	30.2 +0.1	27.68 -81	17.7 0.0
June 9.8	61.42 -57	12.0 1.5	15.09 -52	8.7 1.2	59.73 -99	30.6 0.7	28.50 -88	18.0 +0.6
19.7	61.98 -54	13.8 2.0	15.71 -50	10.1 1.7	60.72 -97	31.6 1.8	29.32 -82	18.9 1.1
29.7	62.50 -49	16.0 2.5	16.29 -56	12.1 2.2	61.67 -93	33.1 1.6	30.14 -79	20.3 1.7
July 9.7	62.97 -44	18.7 2.8	16.84 -51	14.4 2.6	62.57 -88	35.1 2.2	30.90 -74	22.2 2.1
19.6	63.37 -37	21.7 2.1	17.32 -45	17.2 2.9	63.38 -76	37.6 2.7	31.61 -67	24.5 2.6
29.6	63.71 -29	25.0 2.4	17.74 -38	20.3 2.2	64.09 -66	40.5 2.0	32.24 -59	27.3 2.9
Aug. 8.6	63.96 -22	29.5 2.5	18.07 -30	23.6 2.4	64.69 -58	43.6 2.8	32.78 -49	30.4 2.2
18.6	64.14 -18	32.0 2.6	18.33 -21	27.1 2.5	65.16 -40	47.1 2.5	33.22 -39	33.7 2.4
28.5	64.22 +05	35.7 2.6	18.50 -12	30.7 2.6	65.49 -26	50.7 2.7	33.56 -28	37.2 2.6
Sept. 7.5	64.23 -04	39.2 2.5	18.57 +04	34.4 2.6	65.68 +12	54.4 2.7	33.77 -16	40.9 2.7
17.5	64.15 -12	42.7 2.4	18.57 -05	37.9 2.5	65.72 -03	58.1 2.7	33.88 +05	44.6 2.7
27.5	63.99 -19	46.0 2.2	18.47 -13	41.4 2.3	65.62 -17	61.8 2.6	33.87 -07	48.2 2.6
Oct. 7.4	63.76 -26	49.0 2.9	18.30 -21	44.6 2.1	65.38 -30	65.3 2.4	33.74 -18	51.8 2.4
17.4	63.47 -32	51.7 2.5	18.06 -28	47.6 2.8	65.01 -42	68.7 2.2	33.51 -29	55.1 2.2
27.4	63.13 -37	54.0 2.1	17.73 -35	50.2 2.4	64.52 -55	71.7 2.9	33.17 -38	58.2 2.9
Nov. 6.3	62.74 -41	55.8 1.6	17.36 -40	52.4 2.0	63.91 -66	74.4 2.5	32.74 -47	60.9 2.5
16.3	62.31 -44	57.2 1.1	16.94 -44	54.2 1.6	63.20 -75	76.7 2.0	32.22 -56	63.2 2.1
26.3	61.96 -45	58.0 +0.5	16.48 -47	55.4 0.9	62.41 -82	78.4 1.5	31.63 -62	65.1 1.6
Dec. 6.3	61.40 -46	58.2 -0.1	16.00 -49	56.0 +0.4	61.55 -87	79.6 0.9	30.99 -67	66.3 1.0
16.2	60.94 -45	57.8 0.7	15.50 -49	56.1 -0.2	60.65 -90	80.2 +0.3	30.30 -69	67.1 +0.4
26.2	60.50 -43	56.8 1.2	15.01 -48	55.6 0.8	59.76 -90	80.2 -0.4	29.60 -70	67.1 -0.2
36.2	60.09 -39	55.3 -1.7	14.54 -45	54.5 -1.4	58.87 -86	79.5 -1.0	28.90 -69	66.6 -0.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Hydri.		Mean Solar Date.	β Chamaleontis.	
	Right Ascension.	Declination South.		Right Ascension.	Declination South.
	^h ^m 0 18	[°] 59'		^h ^m 12 10	[°] 34'
Jan. 1.2	42.60 -08	78.2 -0.0	Jan. 1.7	42.81 +1.18	23.6 +1.5
11.2	41.70 -07	77.1 1.4	11.7	43.96 1.11	25.4 2.1
21.2	40.86 -06	75.4 1.9	21.7	45.02 1.00	27.8 2.6
31.1	40.11 -07	73.2 2.4	31.6	45.97 -07	30.5 2.0
Feb. 10.1	39.46 -08	70.6 2.9	Feb. 10.6	46.77 -07	33.7 2.3
20.1	38.98 -06	67.5 2.2	20.6	47.42 -07	37.1 2.6
Mar. 1.1	38.57 -01	64.2 2.5	Mar. 1.6	47.91 -00	40.8 2.7
11.0	38.33 -17	60.6 2.7	11.5	48.22 -23	44.6 2.8
21.0	38.26 -09	56.8 2.8	21.5	48.37 +06	48.3 2.8
31.0	38.34 +16	53.0 2.8	31.5	48.36 -10	52.1 2.7
Apr. 10.0	38.58 -02	49.2 2.7	Apr. 10.5	48.17 -28	55.6 2.5
19.9	38.98 -03	45.6 2.6	20.4	47.84 -00	59.0 2.2
29.9	39.53 -02	42.1 2.2	30.4	47.37 -53	62.1 2.9
May 9.9	40.22 -05	38.9 2.1	May 10.4	46.78 -55	64.8 2.5
19.8	41.04 -07	35.0 2.7	20.3	46.07 -05	67.2 2.1
29.8	41.97 -07	33.5 2.2	30.3	45.27 -04	69.1 1.6
June 8.8	42.98 1-08	31.5 1.8	June 9.3	44.39 -00	70.4 1.1
18.8	44.06 1-10	29.9 1.2	19.3	43.46 -05	71.3 +0.6
28.7	45.18 1-12	28.9 0.7	29.2	42.50 -06	71.6 0.0
July 8.7	46.31 1-12	28.5 -0.2	July 9.2	41.54 -06	71.4 -0.6
18.7	47.41 1-08	28.6 +0.4	19.2	40.59 -02	70.6 1.1
28.7	48.46 1-01	29.3 1.0	29.2	39.70 -08	69.3 1.6
Aug. 7.6	49.43 -01	30.6 1.5	Aug. 8.1	38.89 -07	67.5 2.0
17.6	50.28 -03	32.3 2.0	18.1	38.19 -03	65.2 2.4
27.6	50.99 -03	34.6 2.4	28.1	37.62 -03	62.7 2.7
Sept. 6.5	51.58 -04	37.2 2.8	Sept. 7.1	37.22 -31	59.8 2.9
16.5	51.90 -07	40.0 2.0	17.0	37.01 -12	56.8 2.1
26.5	52.98 +08	43.1 2.1	27.0	36.99 +08	53.7 2.1
Oct. 6.5	52.96 -11	46.2 2.1	Oct. 7.0	37.17 -29	50.7 2.9
16.4	51.86 -08	49.3 2.0	16.9	37.57 -50	47.8 2.7
26.4	51.47 -07	52.2 2.7	26.9	38.16 -09	45.3 2.4
Nov. 5.4	50.92 -03	54.7 2.4	Nov. 5.9	38.94 -08	43.1 1.9
15.4	50.24 -04	56.9 1.9	15.9	39.88 1.00	41.5 1.4
25.3	49.44 -04	58.6 1.4	25.8	40.24 1.11	40.4 0.7
Dec. 5.3	48.57 -09	59.8 0.8	Dec. 5.8	42.10 1.18	40.0 -0.1
15.3	47.64 -08	60.3 +0.2	15.8	43.20 1.21	40.1 +0.5
25.2	46.71 -08	60.2 -0.4	25.7	44.52 1.20	40.9 1.2
35.2	45.79 -09	69.5 -1.0	35.7	45.70 +1.15	42.4 +1.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Trianguli Australis.		Mean Solar Date.	σ Octantis.	
	Right Ascension.	Declination South.		Right Ascension.	Declination South.
	^h ^m 16 34	[°] ['] 68 46		^h ^m 18 0	[°] ['] 89 16
Jan. 1.9	^s 39.65 +.84	["] 30.5 -1.8	Jan. 2.0	^{m.} ^s 0 45.43 + 7.02	["] 30.4 -2.1
11.9	40.23 .62	29.0 1.4	11.9	0 54.40 10.45	27.4 2.0
21.8	40.89 .68	27.8 1.0	21.9	1 6.22 13.14	24.6 2.6
31.8	41.59 .72	27.1 0.5	31.9	1 20.55 14.45	22.1 2.2
Feb. 10.8	42.33 .76	26.8 -0.1	Feb. 10.9	1 36.97 17.20	20.1 1.8
20.8	43.09 .78	26.9 +0.3	20.8	1 55.00 18.71	18.5 1.4
Mar. 1.7	43.84 .75	27.4 0.7	Mar. 1.8	2 14.23 19.67	17.3 0.9
11.7	44.58 .73	28.3 1.1	11.8	2 34.17 20.12	16.7 -0.4
21.7	45.30 .69	29.6 1.4	21.7	2 54.35 20.19	16.6 +0.2
31.7	45.97 .66	31.1 1.7	31.7	3 14.40 19.80	16.9 0.6
Apr. 10.6	46.59 .59	33.0 2.0	Apr. 10.7	3 33.82 19.02	17.7 1.0
20.6	47.16 .53	35.1 2.2	20.7	3 52.30 17.84	19.0 1.5
30.6	47.65 .46	37.4 2.4	30.6	4 9.38 16.21	20.7 1.0
May 10.5	48.08 .39	39.9 2.5	May 10.6	4 24.80 14.43	22.8 2.2
20.5	48.41 .29	42.4 2.6	20.6	4 38.13 12.22	25.2 2.6
30.5	48.66 .20	45.1 2.6	30.6	4 49.17 9.77	27.9 2.8
June 9.5	48.81 +.10	47.7 2.6	June 9.5	4 57.58 7.06	30.8 2.0
19.4	48.86 .00	50.3 2.5	19.5	5 3.23 4.20	33.9 2.1
29.4	48.82 -.10	52.7 2.2	29.5	5 5.92 + 1.17	37.1 2.1
July 9.4	48.67 .19	54.9 2.1	July 9.4	5 5.56 - 1.67	40.2 2.1
19.4	48.43 .28	56.9 1.8	19.4	5 2.20 4.85	43.2 2.9
29.3	48.10 .36	58.6 1.5	29.4	4 55.90 7.72	46.0 2.7
Aug. 8.3	47.70 .42	59.9 1.1	Aug. 8.4	4 46.85 10.25	48.6 2.4
18.3	47.24 .48	60.7 0.6	18.3	4 35.33 12.62	50.8 2.0
28.2	46.73 .52	61.1 +0.2	28.3	4 21.73 14.50	52.5 1.5
Sept. 7.2	46.21 .53	61.1 -0.2	Sept. 7.3	4 6.50 15.84	53.7 0.9
17.2	45.68 .51	60.5 0.8	17.3	3 50.24 16.62	54.4 +0.4
27.2	45.18 .48	59.5 1.2	27.2	3 33.45 16.77	54.5 -0.2
Oct. 7.1	44.73 .41	58.0 1.6	Oct. 7.2	3 16.93 16.22	54.0 0.6
17.1	44.36 .22	56.2 2.0	17.2	3 1.19 15.10	52.9 1.4
27.1	44.07 .22	54.1 2.2	27.1	2 46.95 12.28	51.2 1.0
Nov. 6.1	43.90 -.11	51.7 2.4	Nov. 6.1	2 34.82 10.00	49.1 2.4
16.0	43.84 +.01	49.2 2.6	16.1	2 25.30 8.08	46.5 2.2
26.0	43.92 .14	46.7 2.5	26.1	2 18.77 4.92	43.5 2.0
Dec. 6.0	44.12 .26	44.2 2.4	Dec. 6.0	2 15.53 - 1.54	40.4 2.2
15.9	44.44 .28	41.9 2.2	16.0	2 15.72 + 1.92	37.1 2.2
25.9	44.87 .49	39.9 1.9	26.0	2 19.35 5.22	33.9 2.2
35.9	45.41 +.58	38.1 -1.5	36.0	2 26.29 + 8.52	30.7 -2.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Andromeda.		γ Pegasi. (Algenib.)		α Cassiopea.		β Ceti.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination South.
	^h 0	^m 1	^h 0	^m 6	^h 0	^m 33	^h 0	^m 36
		28° 21'		14° 26'		55° 48'		18° 42'
Jan. 1.2	33.82	-12	26.04	-13	2.37	-29	57.13	-13
11.2	33.68	-14	25.91	-12	2.07	-29	57.00	-13
21.2	33.54	-12	25.80	-11	1.78	-29	56.87	-12
31.2	33.41	-12	25.69	-10	1.50	-27	56.75	-12
Feb. 10.1	33.30	-10	25.60	-08	1.25	-25	56.64	-10
20.1	33.22	-07	25.53	-06	1.04	-19	56.55	-08
Mar. 1.1	33.17	-03	25.49	-03	0.87	-13	56.48	-03
11.0	33.16	+01	25.48	+01	0.77	-07	56.44	-02
21.0	33.19	-03	25.51	-03	0.73	-00	56.44	+02
31.0	33.26	-10	25.57	-09	0.77	+07	56.47	-03
April 10.0	33.38	-14	25.68	-13	0.88	-13	56.55	-10
19.9	33.55	-19	25.83	-17	1.06	-22	56.66	-14
29.9	33.76	-23	26.02	-21	1.32	-29	56.82	-18
May 9.9	34.01	-27	26.25	-24	1.64	-34	57.02	-23
19.9	34.29	-29	26.51	-27	2.01	-39	57.26	-26
29.8	34.60	-32	26.79	-29	2.42	-43	57.52	-28
June 8.8	34.93	-33	27.09	-31	2.87	-45	57.81	-30
18.8	35.26	-33	27.40	-31	3.33	-47	58.12	-31
28.7	35.59	-33	27.72	-31	3.80	-47	58.44	-32
July 8.7	35.91	-31	28.02	-30	4.27	-45	58.75	-31
18.7	36.22	-29	28.31	-28	4.71	-43	59.06	-30
28.7	36.50	-27	28.58	-26	5.12	-40	59.36	-28
Aug. 7.6	36.75	-22	28.82	-22	5.50	-35	59.63	-26
17.6	36.96	-19	29.03	-19	5.83	-31	59.87	-22
27.6	37.14	-16	29.20	-16	6.11	-25	60.07	-19
Sept. 6.6	37.27	-11	29.33	-11	6.34	-20	60.24	-15
16.5	37.36	-07	29.43	-08	6.51	-14	60.37	-11
26.5	37.41	+03	29.48	-04	6.62	-08	60.47	-07
Oct. 6.5	37.43	-00	29.51	+01	6.67	+03	60.52	+04
16.4	37.41	-04	29.50	-02	6.67	-03	60.54	-00
26.4	37.36	-06	29.46	-06	6.62	-08	60.52	-03
Nov. 5.4	37.28	-09	29.40	-07	6.52	-13	60.48	-06
15.4	37.18	-11	29.31	-09	6.37	-17	60.41	-08
25.3	37.06	-13	29.22	-10	6.18	-21	60.32	-10
Dec. 5.3	36.93	-14	29.11	-11	5.95	-24	60.21	-11
15.3	36.78	-16	28.99	-12	5.69	-27	60.09	-12
25.3	36.64	-16	28.86	-12	5.42	-29	59.97	-13
35.2	36.49	-16	28.74	-12	5.12	-30	59.84	-13

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	♌ Piscium		♎ Ceti.		♏ Piscium.		♐ Eridani. (Achernar.)	
	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination South.
	^h ^m 0 56	[°] 10'	^h ^m 1 17	[°] 51'	^h ^m 1 24	[°] 39'	^h ^m 1 32	[°] 54'
Jan. 1.3	5.51 -12	39.9 -0.7	25.32 -12	65.4 +0.8	25.36 -12	49.7 -0.6	46.98 -33	51.8 +0.6
11.2	5.39 .13	39.2 0.8	25.20 .13	66.2 0.6	25.23 .13	49.1 0.7	46.65 .33	52.2 +0.1
21.2	5.26 .13	38.4 0.7	25.06 .13	66.7 0.5	25.10 .14	48.4 0.8	46.31 .33	52.0 -0.5
31.2	5.13 .12	37.7 0.7	24.93 .13	67.1 0.3	24.96 .14	47.6 0.8	45.98 .32	51.2 1.0
Feb. 10.2	5.00 .11	37.0 0.7	24.80 .12	67.3 +0.1	24.82 .13	46.7 0.8	45.66 .30	49.9 2.5
20.1	4.91 .09	36.4 0.6	24.69 .11	67.3 -0.1	24.69 .12	45.9 0.8	45.38 .27	48.1 2.0
Mar. 1.1	4.83 .07	35.8 0.4	24.59 .09	67.0 0.4	24.58 .10	45.1 0.7	45.12 .23	46.9 2.4
11.1	4.76 .04	35.5 0.3	24.51 .06	66.5 0.6	24.50 .07	44.4 0.6	44.91 .18	43.3 2.8
21.1	4.76 .00	35.3 -0.1	24.47 .03	65.8 0.9	24.45 .03	43.8 0.5	44.76 .13	40.3 2.1
31.0	4.77 +0.4	35.4 +0.2	24.46 +0.1	64.8 1.1	24.44 +0.1	43.4 0.3	44.66 -0.6	37.1 2.3
April 10.0	4.83 .06	35.6 0.4	24.49 .06	63.6 1.3	24.47 .06	42.2 -0.1	44.63 .30	33.7 2.5
20.0	4.93 .12	36.1 0.7	24.57 .10	62.1 1.6	24.54 .10	43.3 +0.2	44.67 +0.7	30.2 2.6
29.9	5.07 .16	36.9 0.9	24.69 .14	60.5 1.7	24.66 .14	43.6 0.4	44.73 .14	26.6 2.6
May 9.9	5.26 .20	38.0 1.2	24.85 .18	58.7 1.9	24.83 .19	44.1 0.7	44.96 .21	23.1 2.5
19.9	5.48 .24	39.3 1.4	25.05 .22	56.7 2.0	25.03 .22	45.0 1.0	45.21 .28	19.7 2.3
29.9	5.73 .27	40.8 1.6	25.28 .25	54.6 2.1	25.28 .25	46.1 1.2	45.50 .34	16.4 2.1
June 8.8	6.01 .29	42.4 1.8	25.55 .27	52.5 2.2	25.54 .28	47.4 1.4	45.88 .39	13.4 2.0
18.8	6.30 .30	44.3 1.9	25.88 .29	50.3 2.1	25.84 .30	48.9 1.6	46.29 .43	10.8 2.4
28.8	6.61 .31	46.2 1.8	26.13 .30	48.2 2.0	26.14 .31	50.6 1.8	46.74 .46	8.6 2.0
July 8.8	6.92 .30	48.1 1.9	26.44 .30	46.2 1.9	26.48 .31	52.4 1.8	47.21 .47	6.8 1.6
18.7	7.22 .29	50.1 1.9	26.74 .30	44.4 1.7	26.77 .31	54.3 1.9	47.69 .48	5.6 1.6
28.7	7.50 .27	51.9 1.8	27.03 .29	42.8 1.8	27.07 .29	56.2 1.9	48.17 .47	4.9 -0.4
Aug. 7.7	7.77 .26	53.7 1.7	27.31 .27	41.5 1.2	27.35 .27	58.1 1.6	48.63 .45	4.7 +0.2
17.6	8.01 .23	55.3 1.5	27.57 .24	40.4 0.9	27.61 .25	59.8 1.7	49.06 .41	5.2 0.7
27.6	8.22 .19	56.7 1.3	27.79 .21	39.7 0.6	27.85 .22	61.5 1.6	49.45 .37	6.2 1.3
Sept. 6.6	8.40 .16	57.9 1.1	27.99 .18	39.2 -0.3	28.06 .19	63.0 1.4	49.79 .31	7.7 1.6
16.6	8.54 .12	58.9 0.9	28.15 .15	39.1 0.0	28.22 .16	64.4 1.3	50.08 .25	9.7 2.2
26.5	8.65 .09	59.7 0.6	28.28 .11	39.3 +0.3	28.36 .12	65.5 1.1	50.29 .18	12.1 2.5
Oct. 6.5	8.72 .06	60.2 0.4	28.38 .08	39.7 0.6	28.47 .09	66.5 0.8	50.44 .11	14.7 2.6
16.5	8.77 +0.3	60.5 +0.2	28.44 .06	40.4 0.8	28.54 .06	67.2 0.6	50.51 +0.4	17.6 2.9
26.5	8.78 .00	60.6 0.0	28.47 +0.1	41.3 0.9	28.58 +0.3	67.8 0.5	50.52 -0.3	20.6 2.0
Nov. 5.4	8.76 -0.3	60.6 -0.2	28.46 -0.1	42.3 1.0	28.60 .00	68.1 0.3	50.46 .00	23.5 2.9
15.4	8.72 .06	60.3 0.3	28.44 .04	43.4 1.1	28.58 .03	68.3 +0.1	50.33 .15	26.3 2.7
25.4	8.66 .07	60.0 0.4	28.38 .06	44.5 1.1	28.54 .06	68.3 -0.1	50.15 .30	28.9 2.4
Dec. 5.3	8.58 .09	59.5 0.5	28.31 .06	45.5 1.1	28.48 .07	68.2 0.2	49.92 .35	31.0 2.0
15.3	8.48 .10	58.9 0.6	28.22 .10	46.6 1.0	28.39 .10	67.9 0.4	49.65 .28	33.8 1.3
25.3	8.37 .11	58.3 0.7	28.11 .11	47.5 0.9	28.29 .11	67.5 0.5	49.36 .31	34.0 1.0
35.3	8.25 -12	57.6 -0.7	27.99 -12	48.3 +0.7	28.17 -12	66.9 -0.6	49.03 .33	34.7 +0.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	♌ Piscium.		♈ Arietis.		♈ Arietis.		65 Ceti (ξ¹).	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	h m 1 38	° 29'	h m 1 47	20 9	h m 1 59	22 50	h m 2 5	° 13'
Jan. 1.3	25.64 -13	27.5 -0.4	21.36 -13	40.7 -0.4	44.54 -13	12.6 -0.2	60.52 -11	28.7 -0.6
11.3	25.52 -13	26.8 0.7	21.23 -14	40.2 0.6	44.41 -14	12.3 0.6	60.41 -13	28.0 0.6
21.2	25.38 -14	26.1 0.7	21.08 -15	39.6 0.7	44.27 -15	11.7 0.6	60.27 -14	27.4 0.6
31.2	25.25 -14	25.4 0.7	20.93 -15	38.9 0.6	44.11 -16	11.0 0.7	60.13 -15	26.8 0.6
Feb. 10.2	25.11 -13	24.8 0.6	20.78 -15	38.0 0.9	43.95 -16	10.2 0.8	59.98 -15	26.2 0.6
20.2	24.98 -13	24.2 0.6	20.63 -14	37.1 0.9	43.79 -15	9.3 0.9	59.84 -14	25.7 0.6
Mar. 1.1	24.86 -10	23.7 0.4	20.50 -13	36.2 0.9	43.65 -13	8.3 1.0	59.71 -13	25.2 0.4
11.1	24.77 -08	23.3 0.3	20.40 -09	35.3 0.9	43.53 -10	7.4 0.9	59.59 -10	24.9 0.3
21.1	24.71 -04	23.1 -0.1	20.32 -06	34.5 0.8	43.44 -07	6.5 0.9	59.51 -07	24.7 -0.1
31.1	24.69 -00	23.0 +0.1	20.29 -01	33.8 0.6	43.39 -03	5.6 0.8	59.46 -03	24.6 +0.1
April 10.0	24.70 +04	23.2 0.3	20.30 +03	33.3 0.4	43.39 +03	4.9 0.6	59.44 +01	24.8 0.3
20.0	24.76 -06	23.6 0.5	20.35 -06	32.9 -0.2	43.43 -07	4.5 0.3	59.48 -06	25.2 0.5
30.0	24.86 -13	24.2 0.8	20.45 -12	32.9 +0.1	43.52 -11	4.2 -0.1	59.55 -10	25.8 0.7
May 9.9	25.01 -17	25.1 1.0	20.60 -17	33.0 0.3	43.66 -15	4.2 +0.1	59.68 -14	26.7 1.0
19.9	25.20 -21	26.2 1.2	20.79 -21	33.5 0.6	43.84 -21	4.5 0.4	59.84 -18	27.7 1.2
29.9	25.42 -24	27.6 1.4	21.02 -26	34.2 0.9	44.07 -24	5.0 0.7	60.04 -22	29.0 1.4
June 8.9	25.68 -27	29.1 1.6	21.28 -28	35.3 1.1	44.33 -28	5.8 0.9	60.28 -25	30.4 1.6
18.8	25.96 -29	30.8 1.7	21.58 -30	36.5 1.3	44.62 -30	6.9 1.2	60.55 -28	32.1 1.7
28.8	26.26 -30	32.6 1.8	21.88 -31	37.9 1.5	44.93 -31	8.2 1.4	60.84 -29	33.8 1.7
July 8.8	26.57 -31	34.4 1.9	22.20 -33	39.6 1.7	45.25 -32	9.7 1.6	61.14 -30	35.6 1.8
18.8	26.87 -30	36.3 1.8	22.52 -32	41.3 1.6	45.57 -32	11.3 1.7	61.44 -30	37.3 1.8
28.7	27.17 -29	38.1 1.8	23.83 -31	43.1 1.8	45.89 -31	13.1 1.8	61.74 -30	39.1 1.7
Aug. 7.7	27.46 -28	39.8 1.7	23.13 -29	44.9 1.8	46.20 -30	14.8 1.8	62.04 -28	40.7 1.6
17.7	27.72 -25	41.4 1.6	23.41 -27	46.7 1.8	46.49 -28	16.6 1.8	62.31 -27	42.3 1.6
27.6	27.96 -23	42.8 1.3	23.67 -24	48.5 1.7	46.76 -26	18.4 1.7	62.57 -24	43.6 1.3
Sept. 6.6	28.17 -20	44.0 1.1	23.89 -21	50.2 1.6	47.00 -23	20.1 1.7	62.80 -22	44.8 1.1
16.6	28.35 -17	45.1 0.9	24.09 -19	51.7 1.6	47.21 -20	21.7 1.6	63.00 -19	45.8 0.8
26.6	28.51 -13	45.9 0.7	24.26 -15	53.1 1.3	47.39 -16	23.2 1.4	63.18 -16	46.5 0.6
Oct. 6.5	28.62 -10	46.4 0.6	24.39 -13	54.3 1.1	47.54 -13	24.5 1.3	63.32 -13	47.0 0.4
16.5	28.71 -07	46.8 0.3	24.49 -09	55.3 1.0	47.66 -10	25.7 1.1	63.44 -10	47.3 +0.2
26.5	28.76 -04	46.9 +0.1	24.56 -06	56.2 0.8	47.74 -07	26.7 0.9	63.52 -07	47.4 0.0
Nov. 5.5	28.79 +01	46.9 -0.1	24.60 +02	56.9 0.6	47.79 -04	27.6 0.8	63.57 -04	47.3 -0.1
15.4	28.79 -02	46.8 0.2	24.61 -01	57.4 0.4	47.81 +01	28.3 0.6	63.60 +01	47.1 0.3
25.4	28.76 -04	46.4 0.4	24.59 -03	57.8 0.2	47.80 -02	28.7 0.4	63.59 -02	46.8 0.4
Dec. 5.4	28.71 -06	46.0 0.6	24.54 -06	57.9 +0.1	47.77 -06	29.0 +0.2	63.56 -04	46.4 0.5
15.3	28.64 -09	45.5 0.5	24.46 -09	57.9 -0.1	47.70 -08	29.1 0.0	63.51 -07	45.8 0.5
25.3	28.54 -10	45.0 0.6	24.37 -11	57.7 0.3	47.61 -11	29.1 -0.1	63.43 -09	45.3 0.6
35.3	28.43 -12	44.3 -0.6	24.25 -12	57.3 -0.4	47.49 -13	28.9 -0.3	63.32 -11	44.7 -0.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ Ceti.		α Ceti.		ζ Arietis.		α Persei.									
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.								
	^h 2	^m 36	^h 2	^m 55	^h 3	^m 7	^h 3	^m 14								
	^s 20 36	^s 2 40	^s 2 55	^s 3 34	^s 20 33	^s 3 14	^s 49 23									
Jan. 1.3	28.09	-09	30.8	-0.7	23.29	-08	3.4	-0.7	19.70	-08	8.1	-0.1	55.93	-14	21.4	+1.2
11.3	27.98	-12	30.0	0.7	23.19	-11	2.7	0.7	19.60	-11	7.9	0.2	55.76	-18	22.4	0.8
21.3	27.85	-14	29.3	0.6	23.07	-13	2.0	0.6	19.47	-14	7.6	0.3	55.56	-22	23.0	+0.4
31.3	27.71	-16	28.8	0.6	22.93	-16	1.4	0.6	19.32	-16	7.3	0.4	55.32	-26	23.2	0.0
Feb. 10.2	27.56	-16	28.3	0.4	22.77	-16	0.9	0.4	19.16	-17	6.8	0.5	55.05	-27	23.1	-0.4
20.2	27.40	-16	27.9	0.8	22.61	-16	0.5	0.8	18.98	-17	6.3	0.6	54.78	-27	22.5	0.7
Mar. 1.2	27.26	-14	27.6	-0.2	22.45	-16	0.3	-0.2	18.81	-17	5.7	0.6	54.51	-26	21.6	-1.0
11.2	27.12	-13	27.5	0.0	22.31	-13	0.2	0.0	18.65	-18	5.0	0.6	54.26	-24	20.4	1.2
21.1	27.01	-09	27.6	+0.2	22.19	-11	0.2	+0.1	18.51	-12	4.4	0.6	54.04	-20	19.0	-1.6
31.1	26.93	-06	27.9	0.4	22.09	-08	0.4	0.8	18.40	-09	3.8	0.8	53.86	-18	17.3	1.7
April 10.1	26.89	-02	28.3	0.6	22.03	-04	0.8	0.8	18.33	-06	3.4	0.4	53.74	-09	15.6	1.8
20.0	26.89	+02	29.0	0.8	22.02	+01	1.4	0.7	18.31	-00	3.0	0.8	53.68	-03	13.8	1.8
30.0	26.94	-07	29.9	1.0	22.04	-08	2.2	0.9	18.33	+06	2.8	-0.1	53.69	+04	12.0	1.7
May 10.0	27.03	-11	31.0	1.2	22.12	-10	3.2	1.1	18.40	-09	2.8	+0.1	53.76	-11	10.4	1.6
20.0	27.16	-16	32.3	1.4	22.24	-14	4.4	1.8	18.51	-14	3.0	0.8	53.91	-16	8.9	1.8
29.9	27.34	-20	33.8	1.6	22.40	-18	5.8	1.8	18.68	-18	3.4	0.8	54.12	-24	7.7	1.1
June 8.9	27.55	-23	35.4	1.7	22.60	-22	7.4	1.8	18.88	-22	4.0	0.7	54.38	-29	6.7	0.8
18.9	27.80	-26	37.2	1.8	22.83	-26	9.0	1.7	19.13	-26	4.8	0.9	54.70	-34	6.1	0.5
28.9	28.07	-28	39.0	1.8	23.09	-27	10.8	1.8	19.40	-28	5.8	1.1	55.06	-37	5.8	-0.2
July 8.8	28.35	-29	40.8	1.8	23.37	-29	12.5	1.7	19.69	-30	7.0	1.2	55.45	-40	5.8	+0.2
18.8	28.65	-30	42.6	1.7	23.66	-30	14.3	1.7	20.00	-31	8.3	1.2	55.86	-42	6.1	0.5
28.8	28.95	-29	44.3	1.6	23.96	-30	15.9	1.6	20.31	-31	9.6	1.4	56.29	-42	6.8	0.6
Aug. 7.7	29.24	-29	45.8	1.5	24.25	-29	17.5	1.5	20.63	-31	11.0	1.4	56.71	-43	7.7	1.1
17.7	29.52	-28	47.2	1.3	24.54	-28	18.8	1.8	20.93	-30	12.4	1.4	57.14	-42	9.0	1.4
27.7	29.79	-26	48.4	1.0	24.81	-27	20.0	1.0	21.23	-29	13.8	1.3	57.55	-40	10.4	1.6
Sept. 6.7	30.04	-24	49.3	0.8	25.07	-26	20.9	0.8	21.52	-27	15.1	1.2	57.93	-38	12.1	1.8
16.6	30.26	-21	50.0	0.5	25.31	-23	21.6	0.6	21.77	-26	16.3	1.2	58.30	-35	14.0	1.9
26.6	30.46	-18	50.4	+0.2	25.52	-20	22.1	0.3	22.01	-22	17.4	1.0	58.63	-32	15.9	2.0
Oct. 6.6	30.63	-16	50.5	0.0	25.71	-17	22.2	+0.1	22.21	-20	18.4	0.9	58.94	-28	18.0	2.1
16.6	30.77	-13	50.5	-0.2	25.87	-15	22.2	-0.2	22.40	-17	19.2	0.8	59.20	-24	20.2	2.2
26.5	30.88	-10	50.2	0.4	26.00	-12	21.9	0.4	22.56	-14	19.9	0.6	59.42	-20	22.4	2.2
Nov. 5.5	30.97	-07	49.7	0.5	26.10	-09	21.5	0.5	22.68	-11	20.5	0.5	59.60	-16	24.6	2.2
15.5	31.02	-04	49.1	0.6	26.17	-06	20.9	0.6	22.78	-08	20.9	0.4	59.73	-11	26.7	2.1
25.4	31.04	+01	48.5	0.7	26.21	+03	20.2	0.7	22.84	-04	21.3	0.3	59.82	+06	28.7	2.0
Dec. 5.4	31.03	-02	47.7	0.8	26.22	-01	19.5	0.8	22.86	+01	21.5	0.2	59.85	-09	30.6	1.8
15.4	31.00	-05	46.9	0.8	26.20	-04	18.7	0.8	22.86	-03	21.6	+0.1	59.82	-06	32.3	1.6
25.4	30.93	-08	46.1	0.8	26.15	-07	17.9	0.7	22.81	-06	21.7	0.0	59.74	-11	33.8	1.3
35.3	30.84	-10	45.4	-0.7	26.07	-09	17.2	-0.7	22.74	-08	21.6	-0.1	59.61	-16	35.0	+1.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	δ Persei.		γ Tauri.		ζ Persei.		γ ¹ Eridani.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination South.
	^h 3 ^m 33	47° 21'	^h 3 ^m 39	23° 41'	^h 3 ^m 45	31° 29'	^h 3 ^m 51	13° 52'
Jan. 1.4	33.36 -11	46.2 +1.0	39.26 -06	35.9 +0.1	51.27 -07	17.4 +0.5	52.91 -06	83.8 +1.5
11.3	33.23 -16	47.2 0.8	39.18 -10	35.9 0.0	51.19 -10	17.8 0.3	52.83 -10	85.2 1.3
21.3	33.05 -20	47.9 0.5	39.07 -13	35.8 -0.1	51.07 -14	18.0 +0.1	52.71 -13	86.3 1.2
31.3	32.83 -23	48.3 +0.3	38.92 -16	35.7 0.2	50.91 -17	18.1 -0.1	52.57 -16	87.3 0.8
Feb. 10.3	32.58 -26	48.3 -0.2	38.75 -18	35.4 0.3	50.72 -19	17.9 0.2	52.41 -17	87.9 0.5
20.2	32.32 -28	47.9 0.5	38.57 -19	35.0 0.4	50.53 -20	17.6 0.4	52.23 -18	88.2 +0.2
Mar. 1.2	32.05 -29	47.2 0.8	38.38 -18	34.5 0.5	50.32 -20	17.1 0.6	52.04 -18	88.3 -0.1
11.2	31.80 -24	46.2 1.1	38.20 -17	34.0 0.6	50.12 -19	16.4 0.7	51.86 -17	88.0 0.4
21.2	31.58 -21	45.0 1.4	38.04 -16	33.3 0.6	49.95 -17	15.7 0.8	51.70 -16	87.5 0.7
31.1	31.39 -16	43.5 1.5	37.91 -12	32.7 0.6	49.79 -14	14.8 0.9	51.55 -13	86.6 1.0
April 10.1	31.25 -11	41.9 1.6	37.81 -08	32.2 0.5	49.68 -09	13.9 0.9	51.43 -10	85.5 1.2
20.1	31.17 -06	40.3 1.6	37.75 -04	31.7 0.4	49.61 -04	13.0 0.8	51.35 -06	84.1 1.5
30.0	31.16 +0.2	38.7 1.6	37.74 +0.1	31.3 0.3	49.59 +0.1	12.2 0.8	51.32 -01	82.5 1.7
May 10.0	31.21 -08	37.1 1.5	37.78 -06	31.0 -0.2	49.63 -06	11.5 0.6	51.33 +0.8	80.7 1.9
20.0	31.32 -13	35.7 1.3	37.87 -11	31.0 0.0	49.72 -11	11.0 0.5	51.38 -06	78.6 2.1
30.0	31.50 -21	34.5 1.1	38.00 -16	31.1 +0.3	49.85 -16	10.6 0.3	51.48 -12	76.4 2.2
June 8.9	31.74 -26	33.6 0.8	38.18 -20	31.4 0.4	50.04 -21	10.4 -0.1	51.62 -16	74.2 2.3
18.9	32.03 -31	32.9 0.5	38.41 -24	31.9 0.6	50.27 -25	10.5 +0.2	51.80 -20	71.8 2.3
28.9	32.36 -35	32.5 -0.3	38.66 -27	32.6 0.8	50.54 -28	10.8 0.4	52.02 -23	69.5 2.3
July 8.9	32.73 -38	32.4 +0.1	38.94 -29	33.4 0.9	50.84 -31	11.2 0.6	52.26 -26	67.3 2.2
18.8	33.12 -40	32.6 0.4	39.25 -31	34.4 1.0	51.15 -33	11.9 0.7	52.53 -27	65.2 2.0
28.8	33.53 -41	33.1 0.6	39.56 -32	35.5 1.1	51.49 -33	12.7 0.9	52.81 -29	63.3 1.8
Aug. 7.8	33.94 -41	33.9 0.9	39.88 -32	36.7 1.2	51.82 -34	13.7 1.0	53.10 -29	61.7 1.5
17.7	34.35 -41	34.9 1.1	40.19 -31	37.9 1.2	52.16 -33	14.8 1.1	53.39 -29	60.3 1.2
27.7	34.75 -40	36.1 1.4	40.51 -30	39.1 1.2	52.49 -32	15.9 1.2	53.68 -28	59.4 0.8
Sept. 6.7	35.14 -38	37.6 1.5	40.80 -28	40.2 1.1	52.81 -31	17.1 1.2	53.96 -27	58.8 -0.4
16.7	35.51 -35	39.2 1.7	41.09 -27	41.3 1.1	53.12 -30	18.3 1.2	54.22 -26	58.6 0.0
26.6	35.85 -33	41.0 1.8	41.35 -26	42.4 1.0	53.41 -28	19.6 1.2	54.47 -24	58.8 +0.4
Oct. 6.6	36.16 -30	42.8 1.9	41.60 -23	43.3 0.9	53.67 -26	20.8 1.2	54.70 -22	59.4 0.8
16.6	36.44 -26	44.8 2.0	41.81 -20	44.2 0.8	53.91 -23	21.9 1.2	54.91 -19	60.4 1.1
26.6	36.69 -22	46.8 2.0	42.01 -18	44.9 0.7	54.12 -20	23.1 1.1	55.08 -17	61.6 1.4
Nov. 5.5	36.89 -18	48.8 2.0	42.17 -15	45.6 0.6	54.31 -16	24.2 1.0	55.24 -14	63.2 1.6
15.5	37.04 -13	50.7 1.9	42.30 -12	46.1 0.5	54.45 -13	25.2 1.0	55.35 -10	64.8 1.7
25.5	37.15 -08	52.6 1.9	42.40 -08	46.6 0.4	54.56 -09	26.1 0.9	55.44 -07	66.6 1.8
Dec. 5.4	37.21 +0.3	54.4 1.7	42.46 +0.4	47.0 0.3	54.63 -06	27.0 0.8	55.49 +0.3	68.5 1.8
15.4	37.21 -02	56.1 1.6	42.48 -00	47.3 0.3	54.66 +0.1	27.8 0.7	55.50 -01	70.2 1.7
25.4	37.16 -07	57.5 1.3	42.47 -04	47.5 0.2	54.65 -04	28.4 0.6	55.48 -04	71.9 1.6
35.4	37.06 -12	58.7 +1.1	42.41 -08	47.6 +0.1	54.59 -08	28.9 +0.4	55.42 -08	73.4 +1.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ Tauri.		ϵ Tauri.		α Tauri. (Aldebaran.)		ϵ Aurigæ.									
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.								
	^h 4 12	^m 15 18	^h 4 20	^m 18 52	^h 4 28	^m 16 14	^h 4 48	^m 32 57								
Jan. 1.4	17.82	-03	15.2	-03	55.52	-03	58.7	-01	21.77	-02	21.9	-02	25.11	-01	6.9	+07
11.4	17.76	-07	15.0	-03	55.47	-07	58.6	-01	21.73	-06	21.7	-02	25.08	-06	9.6	-06
21.4	17.67	-11	14.7	-03	55.38	-10	58.5	-02	21.65	-10	21.5	-02	25.01	-10	10.1	-06
31.3	17.55	-14	14.4	-03	55.26	-14	58.3	-02	21.53	-18	21.2	-02	24.88	-14	10.5	-04
Feb. 10.3	17.39	-16	14.1	-03	55.11	-16	58.1	-02	21.39	-16	21.0	-03	24.72	-16	10.8	+02
20.3	17.22	-18	13.8	-03	54.93	-18	57.8	-03	21.22	-18	20.7	-03	24.53	-20	10.9	-00
Mar. 1.2	17.04	-18	13.5	-03	54.75	-19	57.6	-03	21.03	-18	20.5	-03	24.32	-21	10.9	-02
11.2	16.86	-18	13.2	-03	54.56	-18	57.3	-03	20.85	-18	20.2	-03	24.19	-21	10.6	-03
21.2	16.69	-18	12.9	-02	54.39	-17	56.9	-03	20.67	-17	20.0	-02	23.89	-20	10.2	-05
31.2	16.54	-12	12.7	-02	54.23	-14	56.6	-03	20.51	-14	19.8	-02	23.79	-18	9.7	-06
April 10.1	16.43	-10	12.6	-01	54.10	-11	56.4	-02	20.38	-11	19.6	-01	23.54	-16	9.0	-07
20.1	16.34	-06	12.5	-00	54.02	-07	56.2	-02	20.29	-07	19.5	-00	23.41	-10	8.3	-07
30.1	16.30	-02	12.6	+02	53.97	-03	56.1	-00	20.24	-03	19.6	+01	23.33	-06	7.5	-07
May 10.1	16.31	+03	12.8	-03	53.96	+02	56.1	+01	20.23	+01	19.7	-02	23.36	+00	6.8	-07
20.0	16.36	-08	12.2	-04	54.01	-07	56.2	-02	20.26	-06	20.0	-03	23.32	+00	6.1	-08
30.0	16.46	-12	13.7	-06	54.11	-12	56.5	-04	20.35	-11	20.4	-05	23.40	-10	5.5	-08
June 9.0	16.61	-16	14.4	-07	54.26	-16	57.0	-05	20.48	-16	21.0	-06	23.52	-16	5.1	-04
18.0	16.79	-20	15.2	-09	54.42	-20	57.6	-09	20.65	-19	21.7	-08	23.79	-19	4.7	-03
28.9	17.01	-23	16.2	-10	54.64	-23	58.3	-08	20.86	-23	22.5	-09	23.91	-23	4.6	-01
July 8.9	17.26	-26	17.2	-11	54.89	-26	59.1	-09	21.09	-26	23.4	-10	24.16	-27	4.5	-00
18.0	17.53	-28	18.3	-11	55.16	-28	60.0	-10	21.36	-27	24.4	-10	24.46	-29	4.7	+02
28.8	17.81	-29	19.5	-11	55.45	-29	61.0	-10	21.64	-29	25.5	-10	24.75	-31	4.9	-03
Aug. 7.8	18.11	-30	20.6	-11	55.75	-30	62.0	-10	21.93	-30	26.5	-10	25.08	-30	5.3	-04
17.8	18.41	-30	21.7	-10	56.06	-31	63.0	-10	22.23	-30	27.5	-10	25.41	-34	5.8	-05
27.8	18.71	-30	22.7	-10	56.36	-30	63.9	-09	22.53	-30	28.4	-09	25.75	-34	6.4	-06
Sept. 6.7	19.00	-29	23.6	-08	56.66	-30	64.8	-08	22.82	-29	29.2	-07	26.09	-34	7.0	-07
16.7	19.29	-28	24.3	-07	56.96	-29	65.6	-07	23.11	-28	29.9	-06	26.42	-33	7.7	-07
26.7	19.56	-26	24.9	-05	57.23	-27	66.2	-06	23.39	-27	30.4	-05	26.75	-30	8.5	-07
Oct. 6.6	19.81	-24	25.4	-04	57.40	-26	66.7	-05	23.66	-26	30.8	-05	27.06	-31	9.2	-06
16.6	20.04	-23	25.7	-02	57.74	-23	67.2	-04	23.90	-24	31.1	-02	27.36	-29	10.0	-05
26.6	20.26	-20	25.9	+01	57.96	-21	67.5	-03	24.12	-21	31.2	+01	27.63	-26	10.7	-05
Nov. 5.6	20.44	-17	25.9	-00	58.16	-19	67.7	-02	24.33	-19	31.3	-00	27.89	-24	11.5	-05
15.5	20.60	-14	25.8	-01	58.33	-18	67.8	+01	24.51	-18	31.2	-01	28.11	-20	12.4	-05
25.5	20.72	-11	25.7	-02	58.47	-13	67.9	-00	24.65	-13	31.1	-02	28.29	-17	12.2	-05
Dec. 5.5	20.81	-07	25.5	-02	58.57	-08	67.9	-00	24.76	-08	30.9	-02	28.44	-13	12.0	-05
15.5	20.87	+04	25.3	-02	58.63	+04	67.9	-00	24.83	-08	30.7	-02	28.54	-08	12.8	-05
25.4	20.88	-01	25.0	-03	58.65	-08	67.8	-01	24.86	+01	30.5	-02	28.59	+02	15.6	-05
35.4	20.86	-08	24.8	-03	58.64	-04	67.7	-01	24.84	-08	30.3	-02	28.60	-08	16.3	+07

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	11 Orionis.		α Aurigæ. (Capella.)		β Orionis. (Rigel.)		β Tauri.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.
	^h 4 ^m 57	[°] 15 ['] 12	^h 5 ^m 6	[°] 45 ['] 51	^h 5 ^m 8	[°] 8 ['] 21	^h 5 ^m 17	[°] 28 ['] 29
Jan. 1.4	2.63 .00	54.9 -0.3	57.90 +0.1	32.4 +1.4	12.59 .00	35.7 +1.3	58.00 +0.3	26.5 +0.4
11.4	2.61 -0.4	54.6 0.3	57.88 -0.05	33.7 1.3	12.58 -0.4	37.2 1.4	58.00 -0.2	26.9 0.4
21.4	2.55 -0.6	54.4 0.3	57.79 .11	35.0 1.1	12.51 .08	38.5 1.3	57.95 .07	27.3 0.4
31.4	2.45 -1.2	54.1 0.3	57.65 .17	36.0 0.9	12.41 .13	39.6 1.0	57.86 .12	27.7 0.3
Feb. 10.3	2.32 -1.5	53.9 0.3	57.46 .21	36.8 0.7	12.27 .15	40.5 0.8	57.72 .15	28.0 0.3
20.3	2.16 -1.7	53.7 0.3	57.23 .24	37.3 0.4	12.11 .17	41.1 0.5	57.55 .18	28.1 +0.1
Mar. 1.3	1.98 -1.8	53.6 0.3	56.98 .26	37.5 +0.1	11.93 .19	41.5 +0.3	57.36 .20	28.2 0.0
11.2	1.79 -1.8	53.4 0.3	56.71 .27	37.4 -0.3	11.74 .19	41.6 0.0	57.15 .21	28.2 -0.1
21.2	1.61 -1.8	53.3 0.1	56.45 .26	37.0 0.3	11.55 .18	41.5 -0.3	56.94 .20	28.0 0.3
31.2	1.44 -1.6	53.2 -0.1	56.20 .23	36.4 0.3	11.37 .17	41.1 0.3	56.75 .18	27.7 0.3
April 10.2	1.29 -1.3	53.1 0.0	55.99 .19	35.5 1.0	11.22 .14	40.5 0.8	56.58 .16	27.3 0.4
20.1	1.17 -1.0	53.1 +0.1	55.81 .15	34.4 1.2	11.09 .11	39.6 1.0	56.44 .12	26.9 0.4
30.1	1.10 -0.6	53.2 0.3	55.69 .09	33.2 1.3	10.99 .07	38.5 1.2	56.34 .08	26.4 0.6
May 10.1	1.06 -0.1	53.4 0.3	55.62 -0.03	31.8 1.3	10.94 -0.3	37.1 1.4	56.28 -0.3	26.0 0.4
20.1	1.07 +0.3	53.7 0.4	55.62 +0.03	30.5 1.3	10.93 +0.1	35.6 1.6	56.28 +0.3	25.5 0.4
30.0	1.13 -0.3	54.1 0.5	55.63 .09	29.1 1.3	10.96 .03	33.9 1.8	56.32 .07	25.2 0.3
June 9.0	1.23 -1.3	54.7 0.6	55.79 .15	27.9 1.2	11.03 .10	32.1 1.9	56.41 .11	24.9 0.3
19.0	1.38 -1.6	55.4 0.7	55.97 .20	26.7 1.1	11.15 .14	30.1 2.0	56.55 .16	24.7 -0.1
28.9	1.56 -2.0	56.1 0.8	56.20 .23	25.7 0.9	11.30 .17	28.1 2.0	56.73 .20	24.6 0.0
July 8.9	1.78 -2.2	57.0 0.9	56.47 .29	24.9 0.7	11.49 .20	26.2 1.9	56.94 .23	24.7 +0.1
18.9	2.02 -2.5	57.9 0.9	56.79 .33	24.3 0.5	11.71 .23	24.3 1.8	57.19 .26	24.3 0.3
28.9	2.28 -2.7	58.8 0.9	57.13 .36	23.9 0.3	11.94 .25	22.5 1.7	57.47 .29	25.0 0.3
Aug. 7.8	2.56 -2.8	59.7 0.9	57.59 .39	23.6 -0.1	12.20 .26	20.9 1.6	57.76 .30	25.3 0.3
17.8	2.85 -2.9	60.6 0.8	57.89 .39	23.6 +0.1	12.47 .27	19.5 1.3	58.07 .31	25.7 0.4
27.8	3.14 -3.0	61.4 0.7	58.29 .40	23.8 0.3	12.75 .28	18.5 0.9	58.39 .32	26.1 0.4
Sept. 6.8	3.44 -3.2	62.0 0.6	58.69 .40	24.1 0.4	13.03 .28	17.7 0.6	58.71 .32	26.5 0.4
16.7	3.73 -3.2	62.6 0.5	59.09 .40	24.6 0.6	13.31 .28	17.3 -0.2	59.04 .32	26.9 0.4
26.7	4.02 -3.2	62.9 0.3	59.49 .39	25.3 0.8	13.59 .27	17.3 +0.2	59.36 .32	27.3 0.4
Oct. 6.7	4.30 -2.7	63.2 +0.2	59.87 .38	26.1 0.9	13.85 .26	17.6 0.5	59.67 .31	27.7 0.4
16.6	4.56 -2.5	63.3 0.0	60.24 .36	27.1 1.1	14.10 .24	18.4 0.9	59.97 .29	28.1 0.4
26.6	4.81 -2.4	63.2 -0.1	60.58 .33	28.2 1.2	14.34 .23	19.4 1.2	60.26 .28	28.4 0.4
Nov. 5.6	5.03 -2.1	63.1 0.2	60.90 .30	29.5 1.3	14.56 .21	20.7 1.4	60.52 .26	28.8 0.4
15.6	5.23 -1.9	62.8 0.3	61.18 .26	30.8 1.4	14.75 .18	22.2 1.6	60.77 .22	29.2 0.4
25.5	5.40 -1.5	62.6 0.3	61.42 .23	32.3 1.5	14.91 .15	23.8 1.7	60.98 .19	29.6 0.4
Dec. 5.5	5.54 -1.3	62.2 0.3	61.69 .17	33.8 1.5	15.04 .11	25.6 1.7	61.15 .15	30.0 0.4
15.5	5.64 -0.8	61.9 0.3	61.76 .11	35.3 1.5	15.13 .07	27.3 1.7	61.28 .11	30.5 0.5
25.5	5.69 +0.3	61.6 0.3	61.84 +0.05	36.8 1.5	15.18 +0.3	29.0 1.6	61.37 .08	30.9 0.5
35.4	5.70 -0.1	61.3 -0.3	61.85 -0.01	38.3 +1.4	15.19 -0.1	30.6 +1.3	61.40 -0.1	31.4 +0.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	δ Orionis.		α Leporis.		ϵ Orionis.		α Columbae.	
	Right Ascension.	Declination South.	Right Ascension.	Declination South.	Right Ascension.	Declination South.	Right Ascension.	Declination South.
	^h 5 ^m 25	[°] 0 ['] 23	^h 5 ^m 26	[°] 17 ['] 55	^h 5 ^m 29	[°] 1 ['] 17	^h 5 ^m 34	[°] 34 ['] 8
Jan. 1.4	16.77 +.02	69.6 +1.3	55.60 +.01	21.1 +2.1	31.90 +.08	31.0 +1.2	53.54 -0.1	58.4 +2.8
11.4	16.77 -0.02	70.8 1.1	55.59 -0.04	23.1 1.9	31.91 -0.02	32.0 1.1	53.51 -0.08	61.0 2.8
21.4	16.73 +.06	71.8 1.0	55.52 +.08	24.9 1.7	31.87 +.06	33.2 1.0	53.42 -0.11	63.4 2.2
31.4	16.64 +.10	72.7 0.8	55.42 +.12	26.4 1.4	31.78 +.10	34.1 0.8	53.28 -0.16	65.5 1.8
Feb. 10.3	16.52 +.14	73.4 0.6	55.28 +.16	27.7 1.1	31.66 +.14	34.8 0.6	53.11 -0.19	67.1 1.4
20.3	16.37 +.16	73.9 0.4	55.11 +.18	28.5 0.7	31.51 +.16	35.4 0.6	52.90 -0.22	68.3 1.0
Mar. 1.3	16.20 +.18	74.3 0.2	54.92 +.20	29.1 +0.4	31.34 +.18	35.7 0.3	52.67 -0.24	69.1 0.5
11.3	16.01 +.18	74.4 +0.1	54.72 +.20	29.3 0.0	31.16 +.18	35.9 +0.1	52.42 -0.26	69.4 +0.1
21.2	15.83 +.18	74.4 -0.1	54.52 +.20	29.2 -0.3	30.97 +.18	35.9 -0.1	52.17 -0.28	69.2 -0.4
31.2	15.65 +.17	74.2 0.3	54.32 +.19	28.7 0.6	30.79 +.17	35.7 0.3	51.93 -0.28	68.6 0.6
April 10.2	15.49 +.16	73.8 0.6	54.14 +.17	27.9 0.9	30.63 +.16	35.2 0.6	51.70 -0.21	67.6 1.2
20.1	15.36 +.12	73.2 0.7	53.99 +.14	26.8 1.2	30.50 +.12	34.7 0.7	51.51 -0.18	66.2 1.6
30.1	15.26 +.08	72.5 0.9	53.87 +.10	25.5 1.6	30.39 +.08	33.9 0.9	51.35 -0.14	64.4 2.0
May 10.1	15.20 -0.04	71.5 1.0	53.79 +.06	23.8 1.8	30.33 -0.06	32.9 1.0	51.23 -0.10	62.3 2.3
20.1	15.18 -0.00	70.4 1.2	53.75 -0.02	21.9 2.0	30.30 -0.00	31.8 1.2	51.15 -0.08	59.9 2.6
30.0	15.20 +0.04	69.2 1.3	53.76 +0.03	19.8 2.2	30.32 +0.04	30.5 1.3	51.12 -0.00	57.2 2.8
June 9.0	15.27 +0.09	67.8 1.4	53.80 +0.07	17.6 2.3	30.38 +0.09	29.1 1.6	51.14 +0.04	54.4 2.9
19.0	15.37 +.12	66.4 1.6	53.90 +.11	15.2 2.4	30.48 +.12	27.6 1.6	51.21 +0.09	51.5 2.6
29.0	15.51 +.16	64.8 1.6	54.03 +.16	12.9 2.4	30.62 +.16	26.0 1.6	51.32 +.14	48.5 2.0
July 8.9	15.69 +.19	63.3 1.6	54.20 +.18	10.5 2.3	30.79 +.19	24.4 1.6	51.48 +.17	45.6 2.9
18.9	15.90 +.22	61.8 1.5	54.39 +.21	8.3 2.2	31.00 +.22	22.9 1.5	51.67 +.21	42.8 2.7
28.9	16.13 +.24	60.3 1.4	54.62 +.24	6.2 2.0	31.22 +.24	21.4 1.4	51.90 +.24	40.2 2.5
Aug. 7.8	16.38 +.26	59.0 1.2	54.87 +.26	4.3 1.7	31.47 +.26	20.0 1.3	52.16 +.27	37.9 2.1
17.8	16.64 +.27	57.8 1.1	55.13 +.27	2.7 1.4	31.73 +.27	18.9 1.1	52.44 +.29	36.0 1.7
27.8	16.91 +.28	56.9 0.8	55.41 +.28	1.4 1.0	32.00 +.28	17.9 0.8	52.74 +.30	34.5 1.3
Sept. 6.8	17.19 +.28	56.2 0.5	55.69 +.29	0.6 0.6	32.28 +.29	17.2 0.5	53.05 +.31	33.5 0.7
16.7	17.48 +.28	55.8 -0.3	55.98 +.29	0.2 -0.2	32.57 +.28	16.8 -0.2	53.36 +.32	33.1 -0.2
26.7	17.75 +.27	55.7 0.0	56.26 +.28	0.3 +0.3	32.84 +.28	16.7 +0.1	53.68 +.31	33.2 +0.4
Oct. 6.7	18.03 +.26	55.9 +0.3	56.54 +.27	0.8 0.7	33.12 +.27	16.9 0.4	53.98 +.30	33.8 0.6
16.7	18.29 +.26	56.4 0.6	56.81 +.26	1.7 1.1	33.38 +.26	17.5 0.7	54.28 +.29	35.1 1.5
26.6	18.54 +.24	57.1 0.9	57.06 +.24	3.0 1.6	33.64 +.24	18.3 0.9	54.56 +.26	36.8 1.9
Nov. 5.6	18.77 +.22	58.1 1.1	57.29 +.22	4.7 1.8	33.87 +.22	19.3 1.1	54.81 +.24	38.9 2.3
15.6	18.98 +.20	59.2 1.2	57.50 +.19	6.6 2.0	34.08 +.20	20.5 1.3	55.03 +.26	41.4 2.6
25.5	19.17 +.17	60.5 1.3	57.67 +.16	8.8 2.2	34.27 +.17	21.8 1.4	55.22 +.16	44.2 2.8
Dec. 5.5	19.32 +.13	61.9 1.3	57.81 +.12	11.0 2.3	34.42 +.14	23.2 1.4	55.36 +.12	47.1 2.0
15.5	19.43 +.09	63.2 1.3	57.92 +.08	13.3 2.3	34.54 +.10	24.6 1.4	55.46 +.07	50.1 2.9
25.5	19.50 +0.05	64.5 1.3	57.97 +0.04	15.5 2.3	34.62 +0.06	26.0 1.3	55.51 +0.04	53.0 2.9
35.4	19.53 -0.00	65.7 +1.1	57.99 -0.01	17.6 +2.0	34.65 +0.01	27.3 +1.2	55.50 -0.02	55.8 +2.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Orionis.		μ Geminorum.		α Argus. (Canopus.)		γ Geminorum.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.
	^h ₅ ^m ₄₈	[°] ₇ ['] ₂₂	^h ₆ ^m ₁₄	[°] ₂₂ ['] ₃₄	^h ₆ ^m ₂₀	[°] ₅₂ ['] ₃₇	^h ₆ ^m ₃₀	[°] ₁₆ ['] ₃₀
Jan. 1.5	2.53 +.05	36.6 -0.8	59.51 +.08	31.9 0.0	63.57 -00	39.6 +2.4	6.16 +.09	23.0 -0.4
11.5	2.56 -00	35.8 0.7	59.57 +.03	31.9 +0.1	63.53 -07	43.0 2.2	6.22 +.06	22.6 0.2
21.4	2.53 -04	35.1 0.6	59.58 -02	32.1 0.2	63.42 -14	46.1 2.0	6.25 -00	22.4 0.2
31.4	2.47 -08	34.5 0.5	59.54 -07	32.2 0.2	63.25 -20	48.9 2.6	6.29 -06	22.3 -0.1
Feb. 10.4	2.37 -12	34.1 0.4	59.45 -11	32.5 0.2	63.08 -26	51.3 2.2	6.15 -10	22.2 0.0
20.3	2.23 -16	33.7 0.3	59.32 -16	32.7 0.2	62.73 -30	53.2 1.7	6.08 -13	22.2 +0.1
Mar. 1.3	2.06 -17	33.5 0.2	59.16 -17	32.9 0.2	62.41 -33	54.7 1.2	5.88 -16	22.3 0.1
11.3	1.98 -18	33.4 -0.1	58.97 -19	33.1 0.1	62.06 -36	55.6 0.7	5.71 -19	22.4 0.1
21.3	1.69 -18	33.4 +0.1	58.78 -20	33.2 +0.1	61.70 -36	56.1 +0.2	5.59 -19	22.6 0.1
31.2	1.51 -17	33.5 0.2	58.58 -19	33.3 0.0	61.33 -36	56.0 -0.4	5.34 -18	22.7 0.1
April 10.2	1.36 -15	33.7 0.3	58.40 -17	33.3 0.0	60.98 -34	55.3 0.9	5.16 -17	22.8 0.1
20.2	1.20 -13	34.0 0.4	58.24 -15	33.3 -0.1	60.65 -31	54.2 1.4	4.99 -15	23.0 0.2
30.2	1.09 -09	34.5 0.5	58.11 -11	33.2 0.1	60.36 -27	52.6 1.8	4.86 -12	23.2 0.2
May 10.1	1.02 -05	35.0 0.6	58.01 -08	33.1 0.1	60.10 -23	50.6 2.2	4.76 -08	23.3 0.2
20.1	0.99 -01	35.7 0.7	57.95 -03	33.0 -0.1	59.90 -18	48.2 2.6	4.69 -04	23.6 0.2
30.1	0.92 -03	36.4 0.8	57.94 +0.1	33.0 0.0	59.75 -12	45.5 2.9	4.67 -00	23.8 0.2
June 9.0	1.04 -07	37.3 0.9	57.98 -06	33.0 0.0	59.66 -06	42.5 3.1	4.60 +0.4	24.1 0.2
19.0	1.13 -11	38.3 1.0	58.05 -10	33.0 0.0	59.64 -00	39.3 2.9	4.74 -06	24.5 0.4
29.0	1.26 -15	39.3 1.1	58.17 -14	33.0 +0.1	59.67 +06	36.0 2.8	4.84 -12	24.9 0.4
July 9.0	1.43 -18	40.4 1.1	58.32 -17	33.2 0.1	59.76 -12	32.7 2.8	4.98 -15	25.3 0.4
18.9	1.62 -21	41.5 1.1	58.51 -20	33.3 0.2	59.91 -16	29.5 2.2	5.14 -18	25.7 0.4
28.9	1.84 -23	42.6 1.0	58.73 -23	33.5 0.2	60.12 -22	26.4 2.0	5.34 -21	26.1 0.4
Aug. 7.9	2.08 -25	43.5 0.9	58.98 -25	33.6 0.2	60.37 -28	23.5 2.6	5.56 -23	26.5 0.4
17.9	2.34 -26	44.4 0.8	59.24 -27	33.8 0.2	60.67 -32	21.1 2.2	5.81 -26	26.8 0.2
27.8	2.61 -28	45.1 0.6	59.52 -29	33.9 0.1	61.01 -35	19.1 1.8	6.07 -27	27.1 0.2
Sept. 6.8	2.89 -28	45.6 0.4	59.82 -30	34.0 +0.1	61.38 -38	17.6 1.2	6.35 -28	27.2 +0.1
16.8	3.18 -29	46.0 +0.2	60.12 -31	34.0 0.0	61.76 -40	16.7 -0.6	6.63 -29	27.3 -0.1
26.7	3.46 -29	46.1 0.0	60.43 -31	34.0 -0.1	62.17 -40	16.4 0.0	6.93 -30	27.1 0.2
Oct. 6.7	3.75 -28	45.9 -0.2	60.74 -31	33.8 0.2	62.57 -40	16.7 +0.7	7.23 -30	26.9 -0.2
16.7	4.02 -27	45.6 0.4	61.05 -30	33.6 0.2	62.97 -39	17.7 1.3	7.53 -30	26.5 0.4
26.7	4.29 -26	45.0 0.6	61.35 -30	33.4 0.3	63.35 -37	19.3 1.9	7.83 -29	26.0 0.5
Nov. 5.6	4.55 -24	44.3 0.8	61.65 -29	33.1 0.3	63.71 -34	21.5 2.4	8.19 -28	25.4 0.6
15.6	4.78 -22	43.5 0.9	61.92 -28	32.9 0.3	64.02 -29	24.1 2.6	8.40 -26	24.8 0.6
25.6	4.99 -19	42.5 0.9	62.18 -24	32.6 0.2	64.29 -24	27.1 2.3	8.65 -24	24.2 0.6
Dec. 5.6	5.17 -16	41.6 1.0	62.40 -20	32.4 0.2	64.51 -17	30.5 2.4	8.88 -21	23.5 0.6
15.5	5.31 -12	40.6 0.9	62.58 -16	32.3 -0.1	64.65 -11	33.9 2.5	9.07 -17	23.0 0.6
25.5	5.41 -08	39.7 0.9	62.72 -12	32.2 0.0	64.74 +05	37.4 2.6	9.22 -13	22.5 0.4
35.5	5.47 +0.4	38.9 -0.8	62.82 +07	32.2 0.0	64.75 -02	40.9 +2.4	9.32 +08	22.1 -0.2

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Canis Majoris. (Sirius.)		β Canis Majoris.		δ Canis Majoris.		δ Geminorum.	
	Right Ascension.	Declination South.	Right Ascension.	Declination South.	Right Ascension.	Declination South.	Right Ascension.	Declination North.
	^h ^m 6 39	[°] ['] 16 32	^h ^m 6 53	[°] ['] 28 47	^h ^m 7 3	[°] ['] 26 11	^h ^m 7 12	[°] ['] 22 13
Jan. 1.5	20.96 +08	23.3 +2.3	27.71 +08	50.2 +2.9	2.81 +10	16.0 +2.8	15.25 +1.18	10.6 -0.1
11.5	21.01 +03	25.5 2.2	27.77 +08	53.0 2.8	2.88 +04	18.8 2.7	15.37 -09	10.5 0.0
21.5	21.02 -02	27.6 2.0	27.77 -02	55.7 2.6	2.90 -01	21.4 2.8	15.44 +04	10.5 +0.1
31.4	20.97 -07	29.5 1.7	27.72 -07	58.1 2.8	2.86 -06	23.7 2.2	15.45 -01	10.8 0.2
Feb. 10.4	20.89 -11	31.1 1.4	27.62 -12	60.2 1.9	2.78 -11	15.8 1.9	15.41 -06	11.0 0.2
20.4	20.76 -15	32.4 1.1	27.48 -16	62.0 1.6	2.65 -16	27.5 1.6	15.32 -11	11.4 0.4
Mar. 1.3	20.59 -17	33.4 0.8	27.31 -19	63.3 1.2	2.49 -18	28.9 1.2	15.19 -14	11.7 0.4
11.3	20.41 -19	34.0 0.5	27.10 -21	64.3 0.8	2.29 -20	29.9 0.8	15.03 -17	12.1 0.4
21.3	20.21 -20	34.4 +0.2	26.88 -22	64.9 +0.4	2.08 -21	30.5 +0.4	14.85 -18	12.5 0.3
31.3	20.01 -20	34.4 -0.1	26.65 -23	65.0 -0.1	1.87 -22	30.7 0.0	14.67 -19	12.8 0.2
April 10.2	19.81 -19	34.1 0.5	26.43 -22	64.8 0.5	1.65 -21	30.5 -0.4	14.48 -18	13.1 0.2
20.2	19.63 -17	33.4 0.8	26.22 -20	64.1 0.8	1.45 -19	29.9 0.7	14.30 -17	13.3 0.2
30.2	19.48 -14	32.5 1.1	26.03 -17	63.1 1.2	1.26 -17	29.0 1.1	14.14 -14	13.4 0.1
May 10.2	19.35 -11	31.3 1.3	25.87 -14	61.7 1.6	1.11 -14	27.7 1.4	14.01 -11	13.5 +0.1
20.1	19.26 -07	29.9 1.6	25.75 -11	60.0 1.9	0.98 -11	26.2 1.7	13.92 -08	13.6 0.0
30.1	19.20 -04	28.2 1.8	25.66 -07	58.0 2.1	0.90 -07	24.3 2.0	13.86 -04	13.6 0.0
June 9.1	19.19 -00	26.3 1.9	25.61 -03	55.7 2.4	0.85 -08	22.2 2.2	13.84 -00	13.6 0.0
19.0	19.21 +04	24.3 2.0	25.61 +02	53.3 2.6	0.84 +01	19.8 2.4	13.87 +04	13.6 0.0
29.0	19.28 +08	22.2 2.1	25.65 +06	50.7 2.6	0.86 +06	17.4 2.6	13.93 +08	13.5 0.0
July 9.0	19.37 -12	20.1 2.1	25.72 -10	48.1 2.6	0.93 -09	14.9 2.6	14.03 -12	13.5 -0.1
19.0	19.51 -15	18.0 2.1	25.84 -13	45.4 2.6	1.04 -12	12.4 2.6	14.16 -15	13.4 0.1
28.9	19.67 -18	16.0 1.9	25.99 -17	42.9 2.4	1.18 -16	10.0 2.3	14.33 -18	13.4 0.1
Aug. 7.9	19.87 -20	14.1 1.7	26.17 -20	40.6 2.2	1.36 -19	7.7 2.1	14.52 -21	13.2 0.1
17.9	20.08 -23	12.5 1.5	26.38 -23	38.5 1.9	1.56 -22	5.7 1.9	14.74 -23	13.1 0.2
27.9	20.32 -26	11.2 1.1	26.62 -25	36.7 1.6	1.79 -24	4.0 1.6	14.98 -25	12.9 0.2
Sept. 6.8	20.58 -28	10.2 0.8	26.88 -27	35.4 1.1	2.04 -26	2.7 1.1	15.25 -27	12.6 0.2
16.8	20.85 -28	9.7 -0.4	27.17 -29	34.5 0.8	2.31 -28	1.8 0.8	15.53 -29	12.2 0.4
26.8	21.13 -28	9.5 +0.1	27.46 -30	34.1 -0.1	2.60 -29	1.4 -0.1	15.83 -30	11.8 0.5
Oct. 6.7	21.41 -29	9.8 0.8	27.76 -31	34.3 +0.4	2.90 -30	1.5 +0.4	16.14 -31	11.2 0.6
16.7	21.70 -29	10.6 1.0	28.07 -31	35.0 1.0	3.20 -30	2.2 0.9	16.45 -32	10.6 0.6
26.7	21.99 -28	11.8 1.4	28.38 -30	36.2 1.4	3.51 -30	3.3 1.4	16.77 -32	9.9 0.7
Nov. 5.7	22.26 -27	13.3 1.7	28.68 -29	37.9 1.9	3.81 -29	4.9 1.8	17.09 -31	9.3 0.7
15.6	22.52 -26	15.2 2.0	28.96 -27	40.0 2.2	4.09 -27	6.9 2.2	17.40 -30	8.6 0.7
25.6	22.76 -22	17.3 2.2	29.21 -24	42.5 2.6	4.35 -25	9.3 2.5	17.69 -28	8.0 0.6
Dec. 5.6	22.97 -19	19.6 2.4	29.44 -21	45.2 2.8	4.58 -21	11.9 2.7	17.96 -25	7.4 0.5
15.6	23.14 -16	22.0 2.4	29.62 -18	48.0 2.9	4.78 -17	14.7 2.8	18.20 -22	7.0 0.4
25.5	23.27 -11	24.4 2.4	29.76 -12	51.0 2.9	4.93 -13	17.5 2.8	18.40 -17	6.7 0.2
35.5	23.36 +06	26.8 +2.3	29.85 +07	53.8 +2.8	5.03 +08	20.3 +2.8	18.55 +12	6.5 -0.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Geminorum. (Castor.)		α Canis Minoris. (Procyon.)		β Geminorum. (Pollux.)		γ Geminorum.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h 7 ^m 26	[°] 32 ['] 10	^h 7 ^m 32	[°] 5 ['] 33	^h 7 ^m 37	[°] 28 ['] 20	^h 7 ^m 45	[°] 27 ['] 5
Jan. 1.5	11.14 +.17	19.0 +0.4	24.46 +.18	29.9 -1.3	15.06 +.18	21.4 +0.3	25.88 +.19	65.1 0.0
11.5	11.29 -.13	19.5 0.6	24.59 -.10	28.7 1.1	15.21 -.13	21.7 0.3	26.04 -.13	65.2 +0.2
21.5	11.38 +.08	20.2 0.7	24.66 +.08	27.7 1.0	15.31 -.07	22.0 0.3	26.14 -.08	65.5 0.4
31.5	11.41 -.00	20.9 0.8	24.69 -.00	26.8 0.8	15.35 +.01	22.6 0.3	26.19 +.02	66.0 0.5
Feb. 10.4	11.38 -.08	21.7 0.8	24.66 -.08	26.1 0.6	15.33 -.04	23.2 0.7	26.18 -.08	66.5 0.6
20.4	11.30 -.10	22.6 0.9	24.59 -.09	25.6 0.4	15.26 -.09	23.9 0.7	26.12 -.08	67.2 0.7
Mar. 1.4	11.17 -.16	23.4 0.8	24.48 -.13	25.3 0.2	15.15 -.13	24.6 0.7	26.02 -.12	67.9 0.7
11.3	11.01 -.18	24.2 0.7	24.34 -.16	25.1 -0.1	14.99 -.17	25.3 0.7	25.87 -.16	68.6 0.7
21.3	10.82 -.20	24.8 0.6	24.18 -.17	25.1 0.0	14.81 -.19	25.9 0.6	25.70 -.18	69.2 0.6
31.3	10.61 -.21	25.4 0.4	24.00 -.18	25.2 +0.2	14.63 -.20	26.4 0.3	25.51 -.19	69.7 0.5
April 10.3	10.41 -.20	25.7 0.3	23.83 -.17	25.4 0.3	14.42 -.19	26.9 0.3	25.32 -.19	70.2 0.4
20.2	10.21 -.19	25.9 +0.1	23.66 -.16	25.7 0.4	14.23 -.18	27.1 0.2	25.13 -.18	70.5 0.3
30.2	10.03 -.17	25.9 -0.1	23.50 -.14	26.2 0.5	14.06 -.16	27.3 +0.1	24.96 -.16	70.7 +0.1
May 10.2	9.88 -.13	25.8 0.3	23.37 -.13	26.7 0.6	13.91 -.13	27.3 0.0	24.81 -.13	70.8 0.0
20.2	9.76 -.10	25.5 0.3	23.27 -.09	27.3 0.6	13.79 -.10	27.2 -0.2	24.69 -.10	70.8 -0.1
30.1	9.68 -.08	25.1 0.4	23.20 -.08	27.9 0.7	13.71 -.08	27.0 0.2	24.61 -.07	70.7 0.2
June 9.1	9.65 -.01	24.7 0.5	23.16 -.02	28.7 0.8	13.67 -.02	26.8 -0.3	24.56 -.03	70.5 0.2
19.1	9.65 +.03	24.1 0.6	23.16 +.02	29.5 0.8	13.66 +.02	26.4 0.4	24.56 +.01	70.2 0.3
29.0	9.70 -.07	23.5 0.6	23.19 -.05	30.3 0.8	13.70 -.06	26.0 0.4	24.59 -.06	69.9 0.4
July 9.0	9.79 -.11	22.8 0.7	23.26 -.08	31.2 0.8	13.78 -.09	25.6 0.5	24.65 -.09	69.4 0.4
19.0	9.92 -.15	22.2 0.7	23.36 -.11	32.0 0.8	13.89 -.13	25.1 0.3	24.76 -.12	69.0 0.3
29.0	10.08 -.18	21.4 0.7	23.49 -.14	32.8 0.7	14.04 -.16	24.6 0.0	24.90 -.13	68.5 0.5
Aug. 7.9	10.28 -.21	20.7 0.7	23.64 -.17	33.5 0.6	14.22 -.19	24.0 0.3	25.07 -.18	68.0 0.6
17.9	10.51 -.24	20.0 0.7	23.83 -.20	34.1 0.5	14.43 -.22	23.4 0.3	25.27 -.21	67.4 0.6
27.9	10.76 -.27	19.3 0.8	24.03 -.23	34.5 0.3	14.66 -.25	22.7 0.7	25.49 -.24	66.8 0.7
Sept. 6.9	11.04 -.29	18.5 0.8	24.26 -.24	34.7 +0.1	14.92 -.27	22.0 0.7	25.75 -.26	66.1 0.7
16.8	11.33 -.31	17.7 0.8	24.51 -.26	34.7 -0.1	15.20 -.29	21.3 0.7	26.02 -.28	65.3 0.8
26.8	11.65 -.32	17.0 0.7	24.78 -.27	34.5 0.4	15.50 -.31	20.6 0.8	26.31 -.30	64.5 0.8
Oct. 6.8	11.98 -.34	16.3 0.7	25.05 -.28	34.0 0.6	15.82 -.33	19.8 0.8	26.62 -.32	63.7 0.9
16.7	12.32 -.36	15.5 0.7	25.34 -.29	33.3 0.6	16.14 -.35	18.9 0.8	26.95 -.33	62.8 0.9
26.7	12.67 -.35	14.9 0.6	25.64 -.30	32.3 1.0	16.48 -.34	18.2 0.8	27.28 -.34	62.0 0.9
Nov. 5.7	13.02 -.35	14.3 0.6	25.94 -.31	31.2 1.2	16.82 -.33	17.4 0.7	27.62 -.34	61.1 0.8
15.7	13.37 -.34	13.9 0.5	26.23 -.32	29.8 1.4	17.15 -.33	16.7 0.6	27.95 -.33	60.3 0.7
25.6	13.69 -.32	13.5 0.4	26.51 -.27	28.4 1.4	17.48 -.31	16.2 0.5	28.28 -.31	59.7 0.6
Dec. 5.6	14.00 -.29	13.4 -0.1	26.77 -.25	27.0 1.5	17.78 -.29	15.7 0.3	28.58 -.29	59.1 0.5
15.6	14.27 -.25	13.4 +0.1	27.00 -.21	25.5 1.4	18.05 -.28	15.5 -0.2	28.86 -.28	58.7 0.3
25.6	14.50 -.21	13.6 0.3	27.20 -.18	24.1 1.2	18.28 -.21	15.4 0.0	29.10 -.22	58.6 -0.1
35.5	14.69 +.16	14.0 +0.5	27.35 +.13	23.0 -1.1	18.47 +.16	15.5 +0.2	29.29 +.17	58.6 +0.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	15 Argus (γ).		β Hydræ.		ϵ Ursæ Majoris.		α Cancri.	
	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h 8	^m 1	^h 8	^m 39	^h 8	^m 50	^h 9	^m 0
	^s 23	^s 55	^s 6	^s 53	^s 48	^s 33	^s 11	^s 11
Jan. 1.6	56.66 +16	37.2 +2.8	47.86 +21	56.2 -1.4	10.22 +21	13.0 +0.9	36.39 +24	42.4 -1.3
11.6	56.79 -11	40.0 2.8	48.05 -16	54.9 1.2	10.50 -26	14.0 1.2	36.60 -19	41.3 1.0
21.5	56.88 +06	42.7 2.6	48.19 -12	53.8 1.0	10.72 -18	15.3 1.3	36.77 -14	40.3 0.8
31.5	56.91 -00	45.2 2.4	48.28 -07	52.8 0.8	10.86 -11	16.9 1.7	36.88 -09	39.6 0.6
Feb. 10.5	56.88 -06	47.5 2.1	48.32 +02	52.1 0.6	10.93 +06	18.6 1.8	36.95 +04	39.2 0.4
20.4	56.81 -09	49.5 1.8	48.31 -03	51.6 0.4	10.93 -04	20.5 1.9	36.96 -01	38.8 -0.2
Mar. 1.4	56.70 -13	51.2 1.6	48.26 -07	51.4 -0.2	10.86 -10	22.4 1.8	36.93 -06	38.8 0.0
11.4	56.55 -16	52.5 1.2	48.17 -11	51.2 0.0	10.73 -16	24.2 1.7	36.85 -09	39.0 +0.2
21.4	56.38 -18	53.5 0.8	48.04 -13	51.3 +0.1	10.55 -20	25.8 1.6	36.74 -12	39.2 0.3
31.3	56.18 -20	54.1 0.4	47.90 -16	51.5 0.2	10.33 -22	27.3 1.3	36.61 -14	39.6 0.4
April 10.3	55.98 -20	54.3 +0.1	47.74 -16	51.8 0.4	10.09 -26	28.5 1.0	36.46 -16	40.0 0.8
20.3	55.79 -19	54.2 -0.3	47.58 -16	52.2 0.4	9.83 -26	29.3 0.7	36.31 -16	40.5 0.5
30.3	55.60 -18	53.7 0.7	47.42 -16	52.7 0.6	9.58 -26	29.8 +0.3	36.15 -16	41.0 0.6
May 10.2	55.43 -16	52.9 1.0	47.28 -13	53.2 0.6	9.34 -22	30.0 0.0	36.01 -14	41.6 0.8
20.2	55.28 -13	51.7 1.8	47.16 -11	53.7 0.6	9.13 -20	29.9 -0.8	35.88 -12	42.1 0.5
30.2	55.16 -10	50.3 1.6	47.05 -09	54.4 0.6	8.95 -16	29.4 0.6	35.76 -10	42.6 0.6
June 9.1	55.07 -07	48.6 1.8	46.98 -06	55.0 0.7	8.80 -12	28.6 1.0	35.68 -07	43.1 0.6
19.1	55.02 -04	46.7 2.0	46.93 -08	55.7 0.7	8.70 -08	27.5 1.2	35.62 -06	43.6 0.6
29.1	55.00 -00	44.6 2.1	46.91 -01	56.3 0.7	8.64 -04	26.2 1.4	35.58 -02	44.1 0.4
July 9.1	55.01 +03	42.4 2.2	46.92 +03	57.0 0.6	8.63 +01	24.6 1.6	35.58 +01	44.5 0.4
19.0	55.06 -07	40.1 2.3	46.95 -05	57.6 0.6	8.66 -06	22.9 1.8	35.60 -04	44.8 0.3
29.0	55.15 -10	37.9 2.2	47.02 -08	58.2 0.5	8.74 -10	21.1 1.9	35.65 -07	45.1 0.2
Aug. 8.0	55.26 -13	35.7 2.1	47.12 -11	58.6 0.4	8.87 -16	19.1 2.0	35.73 -09	45.3 +0.1
18.0	55.41 -16	33.7 1.9	47.25 -14	59.0 0.3	9.03 -19	17.1 2.0	35.84 -12	45.3 0.0
27.9	55.59 -19	32.0 1.6	47.40 -17	59.2 +0.1	9.24 -22	15.1 2.1	35.98 -16	45.2 -0.2
Sept. 6.9	55.80 -22	30.6 1.3	47.58 -19	59.2 -0.1	9.49 -27	13.0 2.1	36.14 -18	44.9 0.4
16.9	56.03 -26	29.6 0.8	47.78 -22	59.0 0.3	9.79 -31	11.0 2.0	36.33 -21	44.4 0.6
26.8	56.29 -27	29.0 -0.4	48.01 -24	58.5 0.5	10.11 -34	9.0 1.9	36.55 -22	43.8 0.6
Oct. 6.8	56.57 -29	28.8 +0.1	48.27 -26	57.9 0.6	10.47 -38	7.2 1.8	36.80 -26	42.9 1.0
16.8	56.87 -30	29.2 0.6	48.54 -28	57.0 1.0	10.86 -40	5.5 1.6	37.07 -28	41.8 1.2
26.8	57.18 -31	30.0 1.1	48.83 -30	55.8 1.2	11.28 -43	4.0 1.4	37.36 -30	40.6 1.3
Nov. 5.7	57.49 -31	31.4 1.6	49.14 -31	54.5 1.4	11.72 -44	2.7 1.1	37.67 -31	39.2 1.5
15.7	57.79 -30	33.1 2.0	49.45 -31	53.0 1.5	12.16 -46	1.7 0.8	37.98 -32	37.7 1.6
25.7	58.09 -29	35.3 2.3	49.76 -30	51.5 1.6	12.61 -44	1.0 0.5	38.30 -32	36.1 1.6
Dec. 5.7	58.37 -26	37.7 2.6	50.05 -29	49.9 1.6	13.04 -42	0.7 -0.1	38.61 -30	34.5 1.6
15.6	58.62 -23	40.4 2.7	50.34 -27	48.3 1.6	13.45 -39	0.8 +0.3	38.91 -29	33.0 1.6
25.6	58.83 -19	43.1 2.8	50.60 -24	46.7 1.5	13.82 -35	1.2 0.6	39.18 -26	31.6 1.3
35.6	58.99 +14	46.0 +2.8	50.81 +20	45.3 -1.3	14.15 +30	2.1 +1.0	39.42 +22	30.3 -1.2

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ Argus.		α Hydræ.		δ Ursæ Majoris.		ε Leonis.	
	Right Ascension.	Declination South.	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h 9 ^m 13	[°] 58 ['] 43	^h 9 ^m 21	[°] 8 ['] 5	^h 9 ^m 23	[°] 52 ['] 16	^h 9 ^m 38	[°] 24 ['] 22
Jan. 1.6	35.96 +30	11.5 +3.4	6.83 +28	19.7 +2.2	61.31 +37	21.5 +0.7	21.72 +38	39.2 -0.8
11.6	36.22 -22	15.1 2.6	7.04 -19	21.8 2.1	61.65 -31	22.4 1.1	21.98 -24	38.5 0.5
21.6	36.40 -14	18.8 2.7	7.22 -16	23.9 2.0	61.93 -24	23.7 1.5	22.20 -19	38.2 -0.2
31.5	36.50 +06	22.6 2.7	7.34 -10	25.8 1.8	62.13 -16	25.3 1.8	22.37 -14	38.2 +0.1
Feb. 10.5	36.51 -08	26.2 2.6	7.41 +06	27.5 1.6	62.26 -08	27.2 2.0	22.48 -09	38.5 0.4
20.5	36.45 -11	29.8 2.4	7.44 -00	28.9 1.3	62.30 +01	29.3 2.1	22.54 +03	39.0 0.6
Mar. 1.4	36.30 -18	33.1 2.1	7.42 -04	30.1 1.1	62.27 -06	31.4 2.1	22.54 -02	39.7 0.8
11.4	36.10 -23	36.0 2.8	7.35 -08	31.1 0.8	62.17 -13	33.5 2.0	22.50 -06	40.5 0.9
21.4	35.84 -28	38.6 2.4	7.26 -11	31.7 0.6	62.02 -18	35.5 1.9	22.41 -10	41.5 1.0
31.4	35.53 -32	40.8 1.9	7.13 -13	32.2 0.3	61.81 -23	37.3 1.7	22.30 -13	42.4 1.0
April 10.3	35.19 -35	42.5 1.5	6.99 -16	32.4 +0.1	61.56 -26	38.8 1.4	22.16 -16	43.4 0.9
20.3	34.82 -37	43.7 1.0	6.84 -16	32.3 -0.1	61.30 -27	40.0 1.0	22.01 -16	44.3 0.8
30.3	34.45 -37	44.4 +0.5	6.69 -16	32.1 0.3	61.03 -27	40.9 0.7	21.85 -16	45.1 0.7
May 10.3	34.08 -36	44.6 -0.1	6.54 -14	31.6 0.5	60.76 -26	41.3 +0.3	21.69 -16	45.8 0.6
20.2	33.72 -35	44.3 0.6	6.41 -13	31.0 0.7	60.51 -24	41.4 -0.1	21.54 -14	46.3 0.5
30.2	33.38 -33	43.5 1.1	6.29 -11	30.2 0.9	60.29 -21	41.1 0.5	21.41 -12	46.7 0.3
June 9.2	33.07 -29	42.2 1.5	6.18 -09	29.2 1.0	60.09 -17	40.4 0.8	21.30 -10	46.9 +0.3
19.1	32.79 -26	40.5 2.0	6.11 -07	28.2 1.1	59.94 -13	39.4 1.2	21.21 -08	47.0 0.0
29.1	32.56 -21	38.3 2.3	6.05 -04	27.0 1.2	59.82 -09	38.1 1.5	21.15 -06	46.9 -0.2
July 9.1	32.37 -16	35.8 2.6	6.02 -02	25.7 1.3	59.76 -04	36.5 1.7	21.11 -02	46.7 0.3
19.1	32.24 -10	33.0 2.9	6.01 +01	24.5 1.3	59.74 -00	34.7 1.9	21.10 +01	46.3 0.5
29.0	32.17 -04	30.1 2.0	6.03 -04	23.2 1.2	59.76 +05	32.6 2.1	21.12 -08	45.8 0.6
Aug. 8.0	32.16 +02	27.0 2.1	6.08 -06	22.0 1.2	59.84 -10	30.4 2.3	21.17 -06	45.1 0.7
18.0	32.22 -09	24.9 2.0	6.16 -09	20.9 1.0	59.96 -15	28.1 2.4	21.25 -10	44.3 0.9
28.0	32.34 -16	20.9 2.9	6.26 -12	19.9 0.8	60.13 -19	25.7 2.4	21.36 -12	43.3 1.1
Sept. 6.9	32.53 -22	18.2 2.6	6.40 -16	19.2 0.6	60.34 -24	23.3 2.4	21.50 -16	42.2 1.2
16.9	32.78 -29	15.7 2.2	6.57 -18	18.7 -0.3	60.61 -28	20.8 2.4	21.67 -19	40.9 1.3
26.9	33.10 -35	13.7 1.8	6.76 -21	18.5 0.0	60.91 -33	18.5 2.3	21.87 -22	39.5 1.5
Oct. 6.8	33.48 -40	12.2 1.2	6.99 -24	18.7 +0.3	61.26 -37	16.2 2.2	22.10 -26	38.0 1.6
16.8	33.90 -44	11.2 -0.6	7.24 -27	19.2 0.7	61.65 -40	14.1 2.0	22.37 -28	36.4 1.7
26.8	34.35 -47	10.9 0.0	7.52 -29	20.1 1.1	62.07 -44	12.1 1.8	22.66 -30	34.7 1.7
Nov. 5.8	34.84 -49	11.2 +0.0	7.81 -30	21.4 1.4	62.52 -46	10.4 1.5	22.98 -33	33.0 1.7
15.7	35.33 -49	12.2 1.3	8.12 -31	22.9 1.7	62.99 -47	9.1 1.2	23.30 -34	31.3 1.7
25.7	35.81 -47	13.8 1.9	8.44 -31	24.7 1.9	63.46 -48	8.1 0.8	23.66 -35	29.7 1.5
Dec. 5.7	36.28 -44	16.0 2.4	8.75 -30	26.7 2.1	63.94 -47	7.4 -0.4	24.01 -34	28.2 1.4
15.7	36.70 -40	18.7 2.9	9.04 -28	28.8 2.2	64.40 -44	7.3 0.0	24.34 -33	26.9 1.2
25.6	37.07 -35	21.8 3.3	9.32 -26	31.1 2.2	64.82 -40	7.5 +0.5	24.66 -30	25.9 0.9
35.6	37.37 +27	25.2 +8.6	9.56 +22	33.3 +2.2	65.20 +35	8.2 +0.9	24.95 +27	25.1 -0.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	μ Leonis.		α Leonis. (Regulus.)		γ^1 Leonis.		ϵ Leonis.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h 9 45	^m 26° 37'	^h 10 1	^m 12° 36'	^h 10 12	^m 20° 30'	^h 10 25	^m 9° 56'
Jan. 1.6	15.44 +.29	26.9 -0.7	20.83 +.28	33.2 -1.4	41.77 +.30	19.5 -1.1	51.89 +.29	59.0 -1.7
11.6	15.71 -.25	26.3 0.4	21.09 -.24	31.9 1.3	42.05 -.26	18.5 0.6	52.16 -.26	57.5 1.4
21.6	15.94 -.20	26.1 -0.1	21.31 -.20	30.9 0.9	42.29 -.22	17.8 0.6	52.40 -.22	56.2 1.2
31.6	16.11 -.16	26.2 +0.2	21.48 -.16	30.0 0.7	42.49 -.17	17.4 -0.2	52.60 -.17	55.2 0.9
Feb. 10.5	16.23 -.09	26.6 0.6	21.61 -.10	29.5 0.4	42.63 -.12	17.3 +0.1	52.75 -.12	54.4 0.6
20.5	16.30 +.04	27.3 0.7	21.68 +.06	29.3 -0.1	42.73 -.07	17.5 0.3	52.85 -.06	54.0 0.3
Mar. 1.5	16.31 -0.01	28.1 0.9	21.71 -.00	29.2 +0.1	42.77 +.02	18.0 0.6	52.90 +.02	53.8 -0.1
11.4	16.27 -.06	29.1 1.0	21.69 -0.04	29.4 0.3	42.76 -0.02	18.6 0.7	52.91 -0.01	53.8 +0.1
21.4	16.20 -.10	30.1 1.1	21.63 -.07	29.8 0.4	42.71 -.07	19.4 0.8	52.87 -.05	54.0 0.3
31.4	16.08 -.13	31.2 1.1	21.54 -.10	30.3 0.6	42.63 -.10	20.3 0.9	52.80 -.06	54.4 0.5
April 10.4	15.94 -.16	32.3 1.0	21.43 -.12	30.9 0.6	42.52 -.12	21.3 0.9	52.71 -.10	54.9 0.6
20.3	15.79 -.16	33.3 0.9	21.30 -.12	31.6 0.7	42.39 -.13	22.2 0.9	52.60 -.12	55.5 0.6
30.3	15.63 -.16	34.1 0.8	21.16 -.14	32.2 0.7	42.25 -.14	23.1 0.8	52.47 -.12	56.2 0.7
May 10.3	15.47 -.16	34.8 0.6	21.02 -.14	32.9 0.7	42.11 -.14	23.9 0.8	52.34 -.12	56.9 0.7
20.3	15.32 -.15	35.4 0.6	20.89 -.12	33.5 0.6	41.97 -.14	24.6 0.6	52.22 -.12	57.5 0.7
30.2	15.18 -.13	35.8 0.3	20.77 -.12	34.2 0.6	41.84 -.12	25.2 0.5	52.09 -.12	58.2 0.6
June 9.2	15.06 -.11	36.0 +0.1	20.66 -.10	34.7 0.5	41.72 -.11	25.6 0.4	51.98 -.11	58.8 0.6
19.2	14.97 -.08	36.0 -0.1	20.57 -.08	35.2 0.5	41.62 -.09	25.9 0.2	51.88 -.09	59.4 0.6
29.1	14.89 -.06	35.9 0.2	20.49 -.06	35.6 0.4	41.54 -.07	26.1 +0.1	51.80 -.06	59.9 0.5
July 9.1	14.85 -0.02	35.5 0.4	20.44 -.04	35.9 0.3	41.48 -.05	26.1 -0.1	51.73 -.06	60.4 0.4
19.1	14.83 -.00	35.0 0.6	20.41 -0.02	36.2 +0.2	41.44 -0.02	25.9 0.2	51.68 -.04	60.7 0.3
29.1	14.84 +0.02	34.4 0.7	20.41 +0.01	36.3 0.0	41.43 -.00	25.6 0.4	51.66 -0.01	60.9 +0.2
Aug. 8.0	14.89 -.06	33.6 0.9	20.43 -.04	36.2 -0.1	41.44 +0.02	25.1 0.6	51.66 +0.01	61.0 0.0
18.0	14.96 -.09	32.6 1.1	20.48 -.06	36.1 0.2	41.48 -.06	24.5 0.7	51.68 -.04	61.0 -0.1
28.0	15.06 -.12	31.5 1.2	20.56 -.09	35.8 0.4	41.55 -.09	23.6 0.9	51.73 -.07	60.8 0.3
Sept. 7.0	15.19 -.16	30.2 1.3	20.66 -.12	35.2 0.6	41.65 -.12	22.6 1.1	51.81 -.10	60.4 0.5
16.9	15.36 -.18	28.8 1.6	20.80 -.16	34.5 0.8	41.79 -.16	21.4 1.3	51.92 -.13	59.8 0.7
26.9	15.56 -.22	27.2 1.8	20.97 -.19	33.6 1.0	41.95 -.18	20.1 1.4	52.07 -.16	58.9 0.9
Oct. 6.9	15.79 -.26	25.6 1.7	21.17 -.22	32.5 1.2	42.15 -.22	18.6 1.6	52.25 -.20	57.9 1.2
16.8	16.06 -.28	23.9 1.8	21.40 -.26	31.2 1.4	42.39 -.26	16.9 1.7	52.46 -.22	56.6 1.4
26.8	16.35 -.31	22.1 1.8	21.67 -.28	29.7 1.6	42.65 -.28	15.1 1.8	52.71 -.26	55.1 1.6
Nov. 5.8	16.67 -.32	20.3 1.8	21.96 -.30	28.0 1.7	42.95 -.31	13.3 1.9	52.99 -.29	53.5 1.7
15.8	17.01 -.34	18.6 1.7	22.27 -.32	26.3 1.8	43.27 -.33	11.4 1.9	53.29 -.31	51.6 1.9
25.7	17.36 -.36	17.0 1.6	22.59 -.33	24.4 1.8	43.60 -.34	9.5 1.8	53.61 -.32	49.8 1.9
Dec. 5.7	17.71 -.35	15.5 1.4	22.92 -.33	22.6 1.8	43.94 -.34	7.7 1.7	53.93 -.33	47.8 1.9
15.7	18.05 -.34	14.2 1.1	23.24 -.32	20.9 1.7	44.28 -.33	6.1 1.6	54.26 -.32	45.9 1.9
25.7	18.38 -.31	13.2 0.9	23.55 -.30	19.3 1.6	44.61 -.31	4.7 1.3	54.57 -.31	44.1 1.7
35.6	18.68 +.28	12.5 -0.6	23.83 +.27	17.8 -1.3	44.91 +.29	3.5 -1.0	54.87 +.28	42.5 -1.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ Argus.		ι Leonis.		ϵ Ursae Majoris.		δ Leonis.	
	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h 10 ^m 39	[°] 58 ['] 59	^h 10 ^m 42	[°] 11 ['] 14	^h 10 ^m 55	[°] 62 ['] 27	^h 11 ^m 7	[°] 21 ['] 14
Jan. 1.7	58.76 +43	11.9 +2.9	19.18 +.30	28.2 -1.6	33.25 +.56	28.7 +0.1	5.13 +.32	38.9 -1.4
11.6	59.16 -.37	15.0 3.2	19.46 -.27	26.7 1.4	33.79 .51	29.2 0.7	5.44 .30	37.6 1.1
21.6	59.50 .30	18.3 3.4	19.71 .23	25.4 1.1	34.27 .45	30.2 1.2	5.78 .26	36.7 0.8
31.6	59.77 .23	21.8 3.6	19.92 .19	24.4 0.9	34.68 .37	31.6 1.7	5.96 .22	36.1 0.4
Feb. 10.6	59.96 .15	25.5 3.7	20.09 .14	23.7 0.6	35.01 .28	33.6 2.1	6.16 .17	35.9 -0.1
20.5	60.07 +.07	29.2 3.6	20.21 .09	23.2 -0.3	35.24 .19	35.9 2.4	6.31 .12	36.0 +0.3
Mar. 1.5	60.10 .00	32.8 3.5	20.27 +.03	23.1 0.0	35.38 +.09	38.4 2.6	6.41 .08	36.4 0.8
11.5	60.07 -.07	36.2 3.3	20.30 .00	23.2 +0.2	35.42 .00	41.1 2.7	6.46 +.03	37.1 0.8
21.5	59.96 .13	39.4 3.1	20.28 -.04	23.5 0.4	35.37 -.09	43.8 2.7	6.46 -.01	38.0 1.0
31.4	59.80 .19	42.3 2.7	20.23 .07	24.0 0.5	35.24 .17	46.5 2.6	6.43 .05	39.1 1.1
April 10.4	59.59 .24	44.9 2.4	20.15 .09	24.5 0.6	35.04 .23	48.9 2.3	6.37 .08	40.2 1.1
20.4	59.33 .27	47.0 2.0	20.04 .11	25.2 0.7	34.78 .28	51.1 2.0	6.28 .10	41.3 1.1
30.3	59.05 .30	48.8 1.5	19.93 .13	26.0 0.7	34.47 .32	53.0 1.6	6.17 .12	42.4 1.1
May 10.3	58.74 .23	50.1 1.0	19.81 .13	26.7 0.7	34.14 .34	54.4 1.2	6.05 .13	43.5 1.0
20.3	58.41 .23	50.8 +0.5	19.68 .13	27.5 0.7	33.79 .34	55.5 0.7	5.92 .13	44.5 0.9
30.3	58.08 .23	51.1 0.0	19.56 .13	28.2 0.7	33.44 .35	55.9 +0.3	5.79 .13	45.3 0.7
June 9.2	57.75 .23	50.9 -0.5	19.44 .11	28.8 0.6	33.09 .36	55.9 -0.2	5.66 .12	45.9 0.6
19.2	57.43 .21	50.2 1.0	19.34 .10	29.4 0.5	32.77 .33	55.4 0.7	5.55 .11	46.4 0.4
29.2	57.13 .20	49.0 1.4	19.25 .08	29.9 0.4	32.48 .31	54.5 1.3	5.44 .10	46.7 +0.2
July 9.2	56.86 .26	47.4 1.8	19.17 .07	30.3 0.3	32.23 .27	53.1 1.6	5.35 .09	46.8 0.0
19.1	56.62 .22	45.3 2.2	19.11 .06	30.5 0.2	32.02 .23	51.3 2.0	5.27 .07	46.7 -0.2
29.1	56.42 .17	43.0 2.5	19.08 -.03	30.7 +0.1	31.85 .19	49.2 2.3	5.21 .05	46.4 0.4
Aug. 8.1	56.27 .12	40.3 2.7	19.06 .00	30.7 -0.1	31.74 .14	46.8 2.6	5.17 -.03	46.0 0.6
18.0	56.18 -.06	37.5 2.9	19.07 +.02	30.6 0.2	31.69 .08	44.0 2.8	5.15 .00	45.3 0.8
28.0	56.15 +.01	34.6 2.9	19.10 .05	30.3 0.4	31.70 -.03	41.1 2.0	5.16 +.03	44.4 1.0
Sept. 7.0	56.19 .08	31.7 2.8	19.17 .06	29.8 0.6	31.77 +.04	37.9 2.2	5.21 .06	43.2 1.3
17.0	56.30 .15	29.0 2.6	19.26 .11	29.1 0.8	31.91 .10	34.7 2.2	5.28 .09	41.9 1.4
26.9	56.48 .23	26.4 2.4	19.39 .15	28.2 1.0	32.11 .17	31.5 2.3	5.39 .13	40.4 1.6
Oct. 6.9	56.74 .29	24.3 2.0	19.56 .18	27.0 1.3	32.38 .24	28.2 2.2	5.53 .17	38.7 1.8
16.9	57.07 .36	22.5 1.5	19.76 .22	25.6 1.6	32.73 .31	25.1 2.1	5.79 .21	36.8 2.0
26.9	57.46 .42	21.3 0.9	19.99 .25	24.1 1.7	33.13 .38	22.1 2.9	5.95 .24	34.7 2.1
Nov. 5.8	57.90 .46	20.6 -0.3	20.27 .28	22.3 1.8	33.60 .44	19.4 2.6	6.21 .28	32.6 2.2
15.8	58.38 .49	20.6 +0.3	20.56 .31	20.5 1.9	34.13 .50	16.9 2.2	6.50 .31	30.4 2.2
25.8	58.89 .51	21.2 0.9	20.87 .32	18.5 2.0	34.69 .54	14.9 1.8	6.82 .33	28.3 2.1
Dec. 5.7	59.40 .51	22.4 1.5	21.20 .33	16.5 2.0	35.28 .58	13.3 1.5	7.16 .34	26.2 2.0
15.7	59.91 .49	24.2 2.1	21.53 .33	14.6 1.9	35.88 .50	12.3 0.8	7.50 .34	24.2 1.8
25.7	60.39 .46	26.5 2.6	21.85 .31	12.8 1.7	36.48 .50	11.8 -0.2	7.85 .34	22.5 1.6
35.7	60.82 +.41	29.3 +2.0	22.15 +.29	11.1 -1.5	37.05 +.58	11.8 +0.4	8.17 +.32	21.0 -1.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	δ Crateris.			τ Leonis.			91 Leonis (ν).			β Leonis.		
	Right Ascension.	Declination South.		Right Ascension.	Declination North.		Right Ascension.	Declination South.		Right Ascension.	Declination North.	
	^h 11	^m 12	^s 14	^h 11	^m 21	^s 3	^h 11	^m 30	^s 0	^h 11	^m 42	^s 15
Jan. 1.7	44.91	+31	49.8	9.00	+31	56.3	11.52	+31	43.2	19.34	+33	31.0
11.7	45.21	.28	52.2	9.30	.39	54.4	11.82	.29	45.3	19.66	.30	29.3
21.6	45.47	.25	54.5	9.57	.28	52.7	12.10	.26	47.1	19.95	.28	28.0
31.6	45.70	.21	56.7	9.81	.22	51.2	12.34	.22	48.8	20.21	.24	27.0
Feb. 10.6	45.88	.16	58.8	10.01	.17	50.0	12.54	.18	50.2	20.43	.20	26.3
20.6	46.02	.12	60.8	10.15	.13	49.0	12.69	.14	51.4	20.61	.16	26.0
Mar. 1.5	46.11	.07	62.5	10.26	.08	48.4	12.81	.09	52.3	20.74	.11	26.0
11.5	46.16	+03	63.9	10.32	+04	48.0	12.88	.05	53.0	20.82	.06	26.3
21.5	46.17	-.01	65.2	10.34	.00	47.8	12.91	+01	53.3	20.86	+02	26.8
31.5	46.14	.04	66.1	10.33	-.03	47.9	12.90	-.02	53.5	20.87	-.01	27.5
April 10.4	46.09	.07	66.8	10.28	.06	48.1	12.87	.06	53.5	20.84	.04	28.4
20.4	46.01	.09	67.3	10.21	.08	48.5	12.80	.07	53.2	20.78	.07	29.4
30.4	45.91	.11	67.5	10.13	.10	49.0	12.72	.09	52.9	20.70	.09	30.5
May 10.3	45.80	.11	67.5	10.02	.10	49.6	12.63	.10	52.4	20.60	.10	31.5
20.3	45.68	.12	67.3	9.92	.11	50.2	12.52	.11	51.8	20.50	.11	32.5
30.3	45.56	.12	66.9	9.80	.11	50.9	12.41	.11	51.2	20.38	.12	33.4
June 9.3	45.44	.12	66.4	9.69	.11	51.6	12.30	.11	50.5	20.26	.12	34.2
19.2	45.32	.11	65.6	9.58	.11	52.3	12.19	.11	49.8	20.15	.11	34.9
29.2	45.21	.11	64.7	9.48	.10	53.0	12.09	.10	49.1	20.04	.11	35.4
July 9.2	45.11	.09	63.7	9.39	.09	53.6	11.99	.09	48.4	19.93	.10	35.8
19.2	45.03	.08	62.6	9.31	.07	54.2	11.91	.08	47.7	19.84	.09	36.0
29.1	44.95	.06	61.4	9.24	.06	54.7	11.83	.07	47.1	19.75	.08	36.0
Aug. 8.1	44.90	.04	60.2	9.19	.04	55.1	11.78	.05	46.6	19.68	.06	35.9
18.1	44.87	-.02	59.1	9.16	-.02	55.3	11.74	-.03	46.1	19.64	.04	35.5
28.0	44.86	+01	58.0	9.16	+01	55.4	11.72	.00	45.8	19.61	-.01	35.0
Sept. 7.0	44.89	.04	57.0	9.18	.04	55.3	11.74	+03	45.7	19.61	+02	34.2
17.0	44.95	.08	56.2	9.23	.07	55.1	11.78	.06	45.7	19.65	.06	33.2
27.0	45.04	.12	55.7	9.32	.11	54.5	11.86	.10	46.1	19.72	.09	31.9
Oct. 6.9	45.18	.16	55.4	9.45	.16	53.8	11.98	.14	46.6	19.82	.13	30.5
16.9	45.35	.19	55.6	9.61	.18	52.7	12.14	.18	47.5	19.97	.17	28.8
26.9	45.57	.23	56.0	9.82	.22	51.4	12.33	.21	48.6	20.16	.21	26.9
Nov. 5.8	45.82	.27	56.8	10.06	.26	49.9	12.56	.23	49.9	20.38	.23	24.9
15.8	46.10	.30	58.0	10.33	.29	48.2	12.83	.28	51.6	20.65	.26	22.7
25.8	46.41	.31	59.5	10.63	.31	46.2	13.13	.31	53.4	20.94	.31	20.5
Dec. 5.8	46.73	.33	61.3	10.94	.32	44.2	13.44	.32	55.4	21.26	.32	18.3
15.7	47.06	.33	63.3	11.27	.33	42.1	13.76	.33	57.5	21.59	.33	16.2
25.7	47.39	.32	65.5	11.60	.32	40.1	14.09	.32	59.6	21.93	.32	14.2
35.7	47.70	+30	67.8	11.91	+30	38.1	14.40	+30	61.7	22.25	+32	12.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ Ursæ Majoris.		ϵ Virginis.		η Virginis.		α^1 Crucis.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination South.
	^h 11 46	^m 54 25	^h 11 58	^m 9 27	^h 12 13	^m 0 3	^h 12 19	^m 62 21
Jan. 1.7	51.86 +.48	27.8 -0.7	28.95 +.32	55.1 -1.9	9.01 +.32	62.4 -2.1	17.24 +.57	38.0 +1.7
11.7	52.33 -.46	27.3 -0.2	29.26 -.31	53.3 1.7	9.33 -.31	60.4 2.0	17.80 -.54	39.9 2.2
21.7	52.77 -.42	27.5 +0.4	29.56 -.28	51.7 1.5	9.63 -.28	58.4 1.8	18.31 -.49	42.4 2.6
31.6	53.17 -.37	28.1 0.9	29.82 -.25	50.4 1.2	9.89 -.25	56.7 1.6	18.78 -.44	45.2 2.0
Feb. 10.6	53.51 -.31	29.3 1.4	30.05 -.21	49.3 0.9	10.13 -.22	55.3 1.3	19.18 -.37	48.3 2.2
20.6	53.78 -.24	31.0 1.9	30.23 -.17	48.7 0.5	10.32 -.18	54.1 1.1	19.52 -.30	51.6 2.4
Mar. 1.6	53.98 -.16	33.1 2.2	30.38 -.12	48.3 -0.2	10.48 -.18	53.1 0.8	19.78 -.22	55.0 2.5
11.5	54.11 -.09	35.4 2.4	30.48 -.06	48.2 +0.1	10.59 -.09	52.5 0.5	19.97 -.15	58.5 2.5
21.5	54.16 +.02	37.9 2.6	30.54 +.04	48.4 0.3	10.67 -.06	52.1 0.3	20.08 -.08	62.0 2.4
31.5	54.15 -.05	40.5 2.6	30.56 -.00	48.8 0.5	10.70 +.02	51.9 -0.1	20.12 +.01	65.3 2.3
April 10.4	54.07 -.11	43.0 2.5	30.55 -.03	49.4 0.7	10.71 -.01	52.0 +0.2	20.09 -.06	68.5 2.1
20.4	53.94 -.15	45.5 2.3	30.51 -.05	50.2 0.8	10.68 -.04	52.2 0.3	20.00 -.12	71.5 2.8
30.4	53.76 -.19	47.7 2.1	30.45 -.07	51.0 0.8	10.63 -.06	52.6 0.4	19.85 -.17	74.1 2.5
May 10.4	53.55 -.22	49.6 1.7	30.36 -.09	51.8 0.9	10.57 -.07	53.1 0.5	19.66 -.22	76.4 2.1
20.3	53.32 -.24	51.2 1.4	30.27 -.10	52.7 0.9	10.49 -.09	53.7 0.6	19.41 -.26	78.3 1.7
30.3	53.07 -.25	52.3 0.9	30.17 -.11	53.6 0.8	10.39 -.10	54.3 0.7	19.13 -.30	79.8 1.8
June 9.3	52.81 -.25	53.0 0.5	30.06 -.11	54.4 0.8	10.29 -.10	55.0 0.7	18.82 -.32	80.8 0.6
19.3	52.56 -.25	53.3 +0.1	29.95 -.11	55.1 0.7	10.19 -.11	55.7 0.7	18.49 -.34	81.4 +0.3
29.2	52.32 -.24	53.1 -0.4	29.84 -.11	55.8 0.6	10.08 -.11	56.4 0.7	18.14 -.35	81.5 -0.2
July 9.2	52.09 -.22	52.5 0.8	29.73 -.10	56.3 0.5	9.97 -.11	57.1 0.7	17.78 -.35	81.1 0.7
19.2	51.88 -.20	51.4 1.3	29.63 -.10	56.7 0.4	9.87 -.10	57.7 0.6	17.43 -.34	80.2 1.1
29.1	51.70 -.17	50.0 1.7	29.54 -.08	57.0 +0.2	9.77 -.09	58.3 0.5	17.09 -.32	78.8 1.6
Aug. 8.1	51.55 -.13	48.1 2.0	29.46 -.07	57.1 0.0	9.68 -.08	58.8 0.4	16.78 -.29	77.0 2.0
18.1	51.44 -.09	45.9 2.3	29.41 -.05	57.0 -0.1	9.61 -.06	59.2 0.3	16.52 -.24	74.9 2.3
28.1	51.36 -.05	43.4 2.6	29.37 -.03	56.8 0.3	9.56 -.04	59.4 +0.2	16.30 -.19	72.5 2.5
Sept. 7.0	51.34 -.00	40.7 2.9	29.35 -.00	56.4 0.6	9.53 -.01	59.5 0.0	16.15 -.12	69.8 2.7
17.0	51.36 +.05	37.7 2.1	29.37 +.03	55.7 0.8	9.53 +.02	59.4 -0.2	16.07 -.04	67.1 2.7
27.0	51.44 -.11	34.5 2.2	29.42 -.07	54.8 1.0	9.57 -.06	59.1 0.5	16.07 +.05	64.3 2.7
Oct. 7.0	51.58 -.17	31.3 2.3	29.51 -.11	53.7 1.3	9.64 -.09	58.5 0.7	16.16 -.14	61.7 2.5
16.9	51.77 -.23	28.0 2.3	29.64 -.15	52.3 1.5	9.76 -.14	57.7 1.0	16.35 -.22	59.2 2.3
26.9	52.03 -.29	24.8 2.2	29.81 -.19	50.7 1.7	9.92 -.18	56.6 1.2	16.62 -.22	57.1 1.9
Nov. 5.9	52.35 -.35	21.6 2.0	30.02 -.23	48.9 1.9	10.12 -.22	55.2 1.5	16.98 -.20	55.4 1.5
15.8	52.72 -.40	18.7 2.8	30.27 -.27	46.9 2.0	10.36 -.26	53.6 1.7	17.41 -.26	54.2 1.0
25.8	53.14 -.44	16.0 2.5	30.55 -.29	44.8 2.1	10.63 -.29	51.8 1.9	17.91 -.22	53.5 -0.4
Dec. 5.8	53.60 -.47	13.7 2.1	30.86 -.31	42.7 2.2	10.93 -.31	49.8 2.1	18.45 -.26	53.5 +0.2
15.8	54.08 -.49	11.8 1.6	31.18 -.33	40.5 2.1	11.25 -.32	47.7 2.1	19.02 -.28	54.0 0.8
25.7	54.58 -.49	10.5 1.1	31.51 -.33	38.4 2.0	11.57 -.33	45.5 2.1	19.60 -.28	55.1 1.4
35.7	55.07 +.48	9.6 -0.6	31.84 +.32	36.4 -1.9	11.90 +.32	43.4 -2.0	20.17 +.28	56.7 +1.9

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Corvi.		12 Can. Venaticorum.		θ Virginis.		α Virginis. (Spica.)	
	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination South.
	^h 12 ^m 27	[°] 22 ['] 39	^h 12 ^m 49	[°] 39 ['] 1	^h 13 ^m 3	[°] 4 ['] 49	^h 13 ^m 18	[°] 10 ['] 28
Jan. 1.8	27.35 +.34	50.1 +2.1	50.09 +.39	44.9 -1.8	6.64 +.33	56.1 +2.1	14.05 +.33	9.5 +2.0
11.7	27.69 .33	52.3 2.3	50.47 .38	43.3 1.3	6.96 .32	58.1 2.0	14.38 .32	11.5 2.0
21.7	28.01 .30	54.6 2.3	50.85 .36	42.3 0.8	7.27 .30	60.1 1.9	14.70 .31	13.5 2.0
31.7	28.29 .27	56.9 2.3	51.20 .34	41.8 -0.2	7.57 .28	61.9 1.8	15.00 .29	15.4 1.9
Feb. 10.6	28.55 .28	59.2 2.3	51.52 .30	41.8 +0.3	7.83 .25	63.6 1.6	15.29 .26	17.2 1.7
20.6	28.76 .19	61.5 2.2	51.79 .26	42.4 0.8	8.07 .22	65.1 1.3	15.52 .23	18.9 1.6
Mar. 1.6	28.94 .15	63.6 2.0	52.02 .20	43.4 1.2	8.27 .18	66.3 1.1	15.73 .20	20.3 1.3
11.6	29.07 .11	65.5 1.8	52.20 .15	44.8 1.6	8.43 .14	67.2 0.8	15.91 .16	21.5 1.1
21.5	29.16 .07	67.2 1.6	52.33 .10	46.6 1.9	8.55 .11	67.9 0.6	16.05 .12	22.5 0.9
31.5	29.21 +.04	68.7 1.4	52.40 .05	48.6 2.1	8.64 .07	68.3 0.3	16.16 .09	23.3 0.7
April 10.5	29.23 .00	70.0 1.2	52.43 +.01	50.8 2.2	8.70 .04	68.5 +0.1	16.23 .06	23.8 0.4
20.5	29.22 -.08	71.1 0.9	52.42 -.03	53.0 2.2	8.72 +.01	68.5 -0.1	16.27 +.03	24.2 0.2
30.4	29.18 .05	71.9 0.7	52.37 .07	55.2 2.1	8.72 -.01	68.4 0.2	16.28 .00	24.3 +0.1
May 10.4	29.12 .07	72.5 0.5	52.29 .10	57.3 2.0	8.69 .04	68.1 0.4	16.27 -.02	24.3 -0.1
20.4	29.04 .09	72.9 +0.2	52.17 .12	59.2 1.8	8.65 .06	67.7 0.5	16.24 .04	24.2 0.2
30.3	28.94 .10	73.0 0.0	52.04 .14	60.9 1.6	8.58 .07	67.2 0.5	16.18 .06	23.9 0.3
June 9.3	28.83 .11	72.9 -0.2	51.89 .16	62.2 1.2	8.50 .09	66.6 0.6	16.11 .08	23.5 0.4
19.3	28.72 .12	72.6 0.4	51.73 .17	63.3 0.9	8.41 .10	66.0 0.6	16.02 .10	23.1 0.5
29.3	28.59 .12	72.0 0.7	51.56 .17	64.0 0.5	8.31 .11	65.4 0.7	15.92 .11	22.5 0.6
July 9.2	28.46 .12	71.3 0.9	51.39 .17	64.3 +0.1	8.20 .11	64.7 0.7	15.81 .12	21.9 0.6
19.2	28.33 .12	70.4 1.0	51.22 .17	64.2 -0.3	8.08 .12	64.0 0.7	15.69 .12	21.3 0.7
29.2	28.21 .12	69.4 1.1	51.05 .16	63.8 0.7	7.96 .12	63.4 0.6	15.56 .12	20.6 0.7
Aug. 8.2	28.10 .11	68.2 1.2	51.90 .14	62.9 1.0	7.84 .11	62.8 0.5	15.44 .12	19.9 0.7
18.1	28.00 .09	67.0 1.3	51.76 .13	61.7 1.4	7.74 .10	62.3 0.5	15.32 .11	19.3 0.7
28.1	27.92 .07	65.7 1.3	51.64 .10	60.2 1.7	7.65 .08	61.9 0.4	15.21 .10	18.6 0.6
Sept. 7.1	27.87 -.04	64.5 1.2	51.55 .07	58.3 2.1	7.58 .06	61.6 -0.2	15.13 .07	18.1 0.5
17.0	27.85 .00	63.3 1.1	51.50 -.04	56.1 2.3	7.53 -.03	61.4 0.0	15.07 .05	17.6 0.4
27.0	27.86 +.04	62.3 0.9	51.48 +.01	53.6 2.6	7.51 +.01	61.5 +0.1	15.04 -.01	17.4 -0.2
Oct. 7.0	27.93 .09	61.5 0.7	51.51 .05	50.9 2.8	7.54 .05	61.7 0.4	15.05 +.03	17.3 0.0
17.0	28.03 .12	61.0 -0.4	51.59 .10	48.1 3.0	7.60 .09	62.2 0.6	15.10 .06	17.5 +0.3
26.9	28.19 .18	60.8 0.0	51.71 .15	45.0 3.1	7.71 .12	63.0 0.9	15.20 .12	17.9 0.5
Nov. 5.9	28.39 .22	60.9 +0.3	51.90 .21	41.9 3.1	7.87 .18	64.0 1.2	15.35 .17	18.5 0.6
15.9	28.64 .27	61.4 0.7	52.13 .26	38.8 3.1	8.07 .22	65.4 1.6	15.54 .21	19.5 1.1
25.9	28.92 .30	62.3 1.1	52.41 .30	35.8 2.9	8.32 .26	66.9 1.7	15.77 .25	20.8 1.4
Dec. 5.8	29.24 .32	63.6 1.4	52.74 .34	33.0 2.7	8.59 .30	68.7 1.9	16.04 .29	22.3 1.6
15.8	29.57 .34	65.2 1.7	53.10 .37	30.4 2.4	8.90 .31	70.6 2.0	16.34 .31	24.0 1.8
25.8	29.91 .34	67.0 2.0	53.47 .38	28.1 2.0	9.22 .32	72.7 2.1	16.66 .32	25.9 1.9
35.7	30.26 +.24	69.1 +2.2	53.86 +.39	26.3 -1.6	9.54 +.32	74.7 +2.0	16.99 +.32	27.9 +2.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	♄ Virginis.		♅ Ursæ Majoris.		♄ Bootis.		♄ Centauri.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination South.
	^h 13 27	^m 0 4	^h 13 42	^m 49 57	^h 13 48	^m 19 3	^h 13 54	^m 59 43
Jan. 1.8	57.50 +.32	52.1 -2.1	18.75 +.44	72.8 -2.1	23.08 +.32	35.9 -2.2	31.53 +.55	41.9 +0.6
11.8	57.82 -.22	50.1 2.0	19.18 -.44	71.0 1.6	23.41 -.33	33.8 2.0	32.08 -.55	42.7 1.0
21.7	58.13 -.31	48.2 1.9	19.62 -.43	69.6 1.0	23.73 -.22	31.9 1.6	32.63 -.55	44.0 1.5
31.7	58.43 -.29	46.4 1.6	20.05 -.41	68.9 -0.4	24.06 -.31	30.5 1.2	33.17 -.52	45.7 1.9
Feb. 10.7	58.71 -.26	44.9 1.4	20.45 -.39	68.8 +0.2	24.35 -.29	29.4 0.8	33.68 -.49	47.8 2.3
20.7	58.96 -.23	43.7 1.1	20.82 -.35	69.4 0.6	24.63 -.26	28.8 -0.4	34.14 -.44	50.2 2.5
Mar. 1.6	59.18 -.20	42.7 0.8	21.14 -.30	70.4 1.3	24.87 -.23	28.6 0.0	34.56 -.39	52.8 2.7
11.6	59.36 -.17	42.1 0.6	21.41 -.24	72.0 1.8	25.08 -.19	28.9 +0.4	34.92 -.33	55.7 2.9
21.6	59.51 -.13	41.7 -0.3	21.63 -.19	74.0 2.2	25.25 -.15	29.5 0.6	35.22 -.27	58.6 3.0
31.5	59.62 -.09	41.5 0.0	21.78 -.13	76.4 2.5	25.38 -.12	30.4 1.1	35.47 -.21	61.6 3.0
April 10.5	59.70 -.06	41.6 +0.2	21.88 -.07	79.0 2.7	25.48 -.06	31.6 1.3	35.65 -.15	64.6 3.0
20.5	59.75 -.03	42.0 0.4	21.93 +.02	81.7 2.7	25.54 -.05	33.0 1.5	35.77 -.09	67.5 2.9
30.5	59.77 +.01	42.4 0.5	21.92 -.08	84.4 2.7	25.57 +.02	34.5 1.6	35.84 +.03	70.3 2.7
May 10.4	59.76 -.02	43.0 0.6	21.86 -.08	87.1 2.6	25.58 -.01	36.1 1.6	35.84 -.09	73.0 2.6
20.4	59.73 -.04	43.7 0.7	21.76 -.13	89.6 2.4	25.55 -.04	37.7 1.5	35.79 -.08	75.4 2.3
30.4	59.68 -.06	44.4 0.7	21.62 -.15	91.8 2.1	25.50 -.06	39.2 1.5	35.68 -.13	77.5 2.0
June 9.4	59.62 -.08	45.2 0.7	21.45 -.18	93.7 1.7	25.43 -.08	40.6 1.3	35.52 -.18	79.3 1.6
19.3	59.53 -.09	45.9 0.7	21.26 -.21	95.2 1.3	25.34 -.10	41.8 1.2	35.32 -.23	80.7 1.3
29.3	59.43 -.10	46.6 0.7	21.04 -.23	96.4 0.9	25.23 -.11	42.9 0.9	35.07 -.27	81.7 0.8
July 9.3	59.32 -.11	47.3 0.7	20.80 -.24	97.1 +0.5	25.11 -.13	43.7 0.7	34.79 -.29	82.4 +0.4
19.2	59.20 -.12	47.9 0.6	20.56 -.24	97.3 0.0	24.97 -.14	44.3 0.5	34.48 -.32	82.6 0.0
29.2	59.08 -.12	48.5 0.5	20.31 -.24	97.1 -0.5	24.83 -.14	44.7 +0.2	34.16 -.33	82.3 -0.5
Aug. 8.2	58.96 -.12	48.9 0.4	20.07 -.24	96.3 0.0	24.69 -.14	44.8 -0.1	33.82 -.33	81.6 0.0
18.2	58.84 -.11	49.3 0.3	19.84 -.22	95.2 1.4	24.55 -.13	44.6 0.3	33.50 -.32	80.4 1.8
28.1	58.73 -.10	49.5 +0.1	19.62 -.20	93.6 1.8	24.42 -.12	44.1 0.6	33.19 -.29	78.9 1.7
Sept. 7.1	58.64 -.08	49.6 0.0	19.43 -.17	91.6 2.2	24.30 -.10	43.3 0.9	32.92 -.25	77.1 2.0
17.1	58.57 -.08	49.4 -0.3	19.28 -.14	89.2 2.6	24.21 -.08	42.3 1.3	32.70 -.19	74.9 2.2
27.1	58.53 -.02	49.1 0.4	19.16 -.08	86.5 2.9	24.15 -.06	40.9 1.5	32.54 -.12	72.6 2.4
Oct. 7.0	58.53 +.02	48.6 0.7	19.10 -0.04	83.5 2.1	24.12 -.01	39.3 1.7	32.46 -0.04	70.1 2.4
17.0	58.57 -.02	47.8 0.9	19.09 +.02	80.2 2.3	24.13 +.04	37.5 2.0	32.45 +.04	67.7 2.4
27.0	58.65 -.11	46.8 1.2	19.14 -.09	76.8 2.5	24.19 -.08	35.3 2.2	32.54 -.13	65.4 2.2
Nov. 5.9	58.79 -.15	45.5 1.4	19.26 -.15	73.3 2.8	24.29 -.13	33.0 2.4	32.72 -.22	63.2 2.0
15.9	58.96 -.20	43.9 1.6	19.44 -.21	69.7 2.5	24.45 -.18	30.5 2.6	32.99 -.31	61.4 1.6
25.9	59.18 -.24	42.2 1.8	19.69 -.28	66.2 2.4	24.65 -.23	27.9 2.6	33.34 -.39	59.9 1.2
Dec. 5.9	59.44 -.27	40.3 2.0	19.99 -.33	62.9 2.2	24.90 -.28	25.3 2.6	33.76 -.45	58.9 0.8
15.8	59.73 -.30	38.2 2.1	20.35 -.38	59.9 2.9	25.18 -.29	22.7 2.6	34.24 -.50	58.4 -0.3
25.8	60.04 -.33	36.1 2.1	20.75 -.41	57.2 2.4	25.48 -.31	20.1 2.4	34.76 -.54	58.4 +0.3
35.8	60.36 +.24	34.0 -2.1	21.17 +.43	55.0 -1.9	25.80 +.33	17.8 -2.2	35.31 +.56	58.9 +0.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α^3 Libræ.		β Bootis.		β Libræ.		μ^1 Bootis.	
	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.
	^h 14 ^m 43	[°] 15 ['] 29	^h 14 ^m 56	[°] 40 ['] 54	^h 15 ^m 9	[°] 8 ['] 53	^h 15 ^m 19	[°] 37 ['] 50
Jan. 1.8	33.82 +.31	17.4 +1.5	56.79 +.33	40.0 -2.6	53.26 +.29	28.7 +1.6	28.62 +.31	27.0 -2.9
11.8	34.14 -.32	19.0 1.6	57.13 .35	37.4 2.4	53.56 -.31	30.3 1.7	28.94 -.33	24.3 2.5
21.8	34.46 -.32	20.6 1.6	57.50 .37	35.3 1.9	53.87 -.31	32.0 1.6	29.28 -.35	22.0 2.1
31.8	34.79 -.32	22.2 1.6	57.87 .37	33.7 1.3	54.18 -.31	33.6 1.5	29.64 -.35	20.2 1.5
Feb. 10.7	35.10 -.31	23.8 1.6	58.24 -.36	32.6 0.7	54.49 -.30	35.0 1.4	29.99 -.36	18.9 1.0
20.7	35.39 -.29	25.3 1.4	58.59 -.34	32.2 -0.1	54.79 -.29	36.4 1.2	30.34 -.34	18.2 -0.4
Mar. 1.7	35.67 -.26	26.7 1.3	58.92 -.32	32.3 +0.4	55.07 -.27	37.5 1.0	30.67 -.32	18.1 +0.2
11.7	35.92 -.23	27.9 1.1	59.22 -.28	33.1 1.0	55.33 -.25	38.4 0.8	30.98 -.29	18.6 0.7
21.6	36.13 -.21	29.0 1.0	59.49 -.25	34.3 1.6	55.56 -.23	39.1 0.6	31.25 -.26	19.6 1.2
31.6	36.33 -.18	29.8 0.8	59.72 -.20	36.0 1.9	55.77 -.19	39.5 0.4	31.49 -.23	21.1 1.7
April 10.6	36.49 -.16	30.5 0.6	59.90 -.16	38.1 2.2	55.95 -.17	39.8 +0.2	31.69 -.18	23.0 2.1
20.5	36.62 -.12	31.0 0.4	60.04 -.12	40.5 2.5	56.10 -.14	39.8 0.0	31.85 -.14	25.2 2.3
30.5	36.72 -.09	31.3 0.3	60.14 -.08	43.0 2.6	56.22 -.11	39.7 -0.2	31.98 -.10	27.7 2.5
May 10.5	36.79 -.06	31.6 +0.2	60.19 +0.03	45.7 2.6	56.32 -.08	39.5 0.2	32.06 -.06	30.3 2.6
20.5	36.84 +.03	31.6 0.0	60.20 -0.1	48.3 2.6	56.39 -.05	39.2 0.4	32.10 +.02	32.9 2.6
30.4	36.85 -.00	31.6 -0.1	60.17 -.05	50.9 2.5	56.43 +.02	38.7 0.4	32.10 -0.2	35.5 2.5
June 9.4	36.84 -.03	31.5 0.1	60.11 -.08	53.2 2.3	56.43 -.01	38.3 0.5	32.07 -.06	37.9 2.3
19.4	36.80 -.05	31.3 0.2	60.01 -.12	55.4 2.0	56.41 -.04	37.8 0.5	31.99 -.09	40.1 2.1
29.4	36.73 -.08	31.1 0.3	59.87 -.15	57.2 1.6	56.36 -.06	37.3 0.5	31.89 -.12	42.1 1.8
July 9.3	36.64 -.10	30.7 0.4	59.71 -.18	58.6 1.3	56.29 -.09	36.8 0.5	31.75 -.15	43.7 1.5
19.3	36.53 -.12	30.3 0.4	59.52 -.20	59.7 0.9	56.19 -.11	36.3 0.5	31.58 -.18	45.0 1.1
29.3	36.40 -.14	29.9 0.5	59.31 -.21	60.4 +0.5	56.06 -.13	35.8 0.5	31.39 -.20	45.9 0.7
Aug. 8.2	36.25 -.15	29.4 0.5	59.10 -.22	60.6 0.0	55.92 -.15	35.3 0.4	31.18 -.22	46.4 +0.3
18.2	36.10 -.15	28.9 0.5	58.87 -.23	60.4 -0.4	55.77 -.15	34.9 0.4	30.96 -.22	46.5 -0.1
28.2	35.95 -.15	28.3 0.5	58.64 -.22	59.8 0.9	55.62 -.16	34.5 0.3	30.74 -.22	46.1 0.6
Sept. 7.2	35.80 -.14	27.8 0.5	58.42 -.21	58.7 1.3	55.46 -.15	34.2 0.3	30.51 -.21	45.3 1.0
17.1	35.67 -.12	27.3 0.5	58.22 -.19	57.2 1.7	55.32 -.13	34.0 -0.2	30.31 -.20	44.1 1.4
27.1	35.57 -.09	26.9 0.4	58.04 -.16	55.3 2.1	55.20 -.11	33.9 0.0	30.12 -.17	42.5 1.8
Oct. 7.1	35.49 -.05	26.6 0.2	57.90 -.12	53.0 2.5	55.11 -.07	33.9 +0.1	29.96 -.14	40.5 2.2
17.1	35.46 -.01	26.4 -0.1	57.81 -.07	50.4 2.8	55.05 -.03	34.1 0.3	29.85 -.09	38.1 2.5
27.0	35.48 +.04	26.4 +0.1	57.76 -.02	47.5 2.0	55.04 +.01	34.5 0.5	29.78 -0.4	35.4 2.8
Nov. 6.0	35.54 -.09	26.6 0.3	57.77 +.04	44.3 2.3	55.07 -.06	35.1 0.7	29.76 +.01	32.4 2.1
16.0	35.66 -.14	27.1 0.6	57.84 -.10	41.0 2.4	55.16 -.11	35.9 0.9	29.81 -.07	29.2 2.2
25.9	35.82 -.19	27.8 0.8	57.97 -.16	37.5 2.4	55.29 -.16	36.9 1.1	29.91 -.13	25.9 2.2
Dec. 5.9	36.04 -.23	28.7 1.1	58.16 -.22	34.1 2.4	55.47 -.20	38.1 1.3	30.07 -.19	22.5 2.4
15.9	36.29 -.27	29.9 1.3	58.40 -.27	30.8 2.2	55.70 -.24	39.6 1.5	30.28 -.24	19.2 2.3
25.9	36.58 -.30	31.3 1.4	58.69 -.31	27.6 2.0	55.96 -.28	41.1 1.6	30.54 -.28	16.0 2.1
35.8	36.89 +.33	32.8 +1.6	59.02 +.34	24.8 -2.0	56.25 +.30	42.8 +1.7	30.84 +.32	13.1 -2.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Coronæ Borealis.		α Serpentis.		δ Serpentis.		δ Coronæ Borealis.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h 15 29	^m 27 9	^h 15 37	^m 6 50	^h 15 44	^m 4 52	^h 15 52	^m 27 15
Jan. 1.9	4.47 +.28	39.7 -2.8	44.70 +.28	40.6 -2.3	12.92 +.28	43.4 -2.1	5.89 +.28	43.8 -2.1
11.8	4.77 -30	37.1 2.4	44.98 -30	38.5 2.0	13.19 -30	41.4 2.0	6.16 -29	41.2 2.4
21.8	5.08 -32	34.9 2.1	45.27 -30	36.5 1.9	13.49 -30	39.5 1.8	6.46 -31	38.8 2.3
31.8	5.40 -33	33.0 1.7	45.58 -30	34.8 1.6	13.79 -30	37.8 1.6	6.78 -32	36.8 1.6
Feb. 10.8	5.73 -32	31.5 1.2	45.88 -30	33.3 1.3	14.09 -30	36.3 1.3	7.10 -32	35.2 1.3
20.7	6.05 -31	30.6 0.7	46.18 -29	32.2 1.0	14.39 -29	35.1 1.0	7.42 -31	34.2 0.8
Mar. 1.7	6.35 -29	30.2 -0.1	46.46 -28	31.4 0.6	14.67 -28	34.3 0.7	7.73 -30	33.6 -0.3
11.7	6.63 -27	30.3 +0.4	46.73 -28	30.9 -0.3	14.94 -28	33.8 -0.3	8.02 -28	33.6 +0.3
21.7	6.89 -24	31.0 0.8	46.97 -23	30.9 +0.1	15.19 -24	33.7 0.0	8.29 -26	34.1 0.7
31.6	7.12 -21	32.0 1.3	47.20 -21	31.1 0.4	15.42 -21	33.8 +0.3	8.54 -23	35.1 1.2
April 10.6	7.32 -18	33.5 1.6	47.39 -18	31.7 0.7	15.62 -19	34.3 0.6	8.76 -20	36.5 1.6
20.6	7.49 -15	35.3 1.9	47.56 -16	32.5 0.9	15.80 -16	35.1 0.6	8.94 -17	38.2 1.9
30.5	7.62 -11	37.3 2.1	47.71 -13	33.6 1.1	15.96 -13	36.0 1.0	9.10 -14	40.3 2.1
May 10.5	7.71 -08	39.5 2.2	47.82 -10	34.7 1.2	16.07 -11	37.1 1.2	9.22 -10	42.4 2.2
20.5	7.78 -06	41.7 2.2	47.90 -07	36.0 1.3	16.16 -08	38.3 1.2	9.30 -07	44.7 2.3
30.5	7.80 +01	43.9 2.2	47.96 -04	37.4 1.3	16.22 -06	39.6 1.3	9.35 +03	47.1 2.3
June 9.4	7.86 -02	46.1 2.1	47.98 +01	38.7 1.3	16.25 +02	40.8 1.2	9.37 -00	49.3 2.3
19.4	7.76 -06	48.1 1.9	47.97 -02	40.0 1.2	16.25 -02	42.0 1.2	9.35 -04	51.4 2.4
29.4	7.69 -09	49.9 1.7	47.94 -04	41.2 1.1	16.22 -06	43.1 1.1	9.29 -07	53.4 1.8
July 9.4	7.58 -13	51.4 1.6	47.87 -08	42.2 1.0	16.16 -08	44.2 1.0	9.20 -10	55.1 1.6
19.3	7.45 -14	52.7 1.1	47.77 -11	43.2 0.9	16.07 -10	45.1 0.8	9.08 -13	56.5 1.3
29.3	7.30 -16	53.7 0.8	47.66 -13	43.9 0.7	15.95 -13	45.8 0.7	8.93 -16	57.7 1.0
Aug. 8.3	7.13 -18	54.3 0.4	47.52 -15	44.5 0.5	15.81 -16	46.4 0.5	8.76 -18	58.4 0.6
18.2	6.94 -19	54.5 +0.1	47.36 -16	44.9 0.3	15.66 -16	46.8 0.3	8.58 -19	58.9 +0.2
28.2	6.75 -19	54.4 -0.3	47.20 -17	45.1 +0.1	15.50 -16	47.1 +0.1	8.38 -20	58.9 -0.1
Sept. 7.2	6.56 -19	54.0 0.7	47.03 -16	45.1 -0.1	15.33 -16	47.1 -0.1	8.18 -20	58.6 0.6
17.2	6.38 -17	53.1 1.0	46.87 -16	44.9 0.4	15.17 -15	46.9 0.3	7.98 -19	58.0 0.9
27.1	6.21 -15	51.9 1.4	46.73 -13	44.4 0.6	15.03 -13	46.6 0.5	7.80 -17	56.9 1.3
Oct. 7.1	6.07 -13	50.3 1.7	46.61 -10	43.7 0.8	14.91 -11	45.9 0.7	7.64 -14	55.4 1.6
17.1	5.97 -08	48.4 2.1	46.53 -07	42.7 1.1	14.82 -07	45.1 1.0	7.52 -10	53.7 2.0
27.1	5.91 -03	46.2 2.4	46.48 -02	41.5 1.3	14.75 -08	44.0 1.2	7.44 -06	51.5 2.3
Nov. 6.0	5.90 +02	43.7 2.6	46.48 +03	40.1 1.6	14.76 +02	42.7 1.4	7.40 -01	49.1 2.6
16.0	5.95 -07	40.9 2.8	46.53 -07	38.4 1.8	14.80 -07	41.1 1.7	7.42 +04	46.5 2.8
26.0	6.04 -12	38.0 3.0	46.63 -12	36.5 2.0	14.90 -12	39.4 1.8	7.49 -10	43.6 2.9
Dec. 5.9	6.19 -17	35.0 3.0	46.78 -17	34.5 2.1	15.04 -17	37.4 2.0	7.61 -15	40.6 3.0
15.9	6.39 -22	32.0 3.0	46.97 -21	32.3 2.2	15.23 -21	35.4 2.1	7.78 -20	37.6 3.0
25.9	6.63 -26	29.0 2.9	47.20 -25	30.1 2.3	15.46 -24	33.3 2.1	8.00 -24	34.6 3.0
35.9	6.90 +29	26.3 -2.6	47.47 +28	28.0 -2.1	15.82 +27	31.2 -2.0	8.26 +27	31.7 -2.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	δ Scorpil.		β^1 Scorpil.		δ Ophiuchi.		τ Herculis.	
	Right Ascension.	Declination South.	Right Ascension.	Declination South.	Right Ascension.	Declination South.	Right Ascension.	Declination North.
	^h 15 52	^m 22 14	^h 15 57	^m 19 26	^h 16 7	^m 3 20	^h 16 15	^m 46 37
Jan. 1.9	30.55 +.28	23.6 +0.8	44.45 +.28	17.8 +1.0	24.39 +.24	59.7 +1.7	44.25 +.27	43.5 -2.8
11.9	30.85 -.31	24.5 1.0	44.74 .30	18.8 1.1	24.64 .27	61.4 1.7	44.54 -.31	40.4 2.9
21.8	31.17 -.32	25.6 1.1	45.05 .31	19.9 1.1	24.92 .29	63.1 1.6	44.86 .24	37.6 2.6
31.8	31.49 -.33	26.7 1.1	45.37 .32	21.1 1.2	25.22 .30	64.6 1.4	45.22 .27	35.4 2.0
Feb. 10.8	31.82 -.33	27.9 1.2	45.69 .32	22.3 1.1	25.52 .30	65.9 1.3	45.60 .28	33.7 1.4
20.8	32.15 -.33	29.0 1.1	46.01 .31	23.4 1.1	25.82 .29	67.1 1.0	45.98 .28	32.6 0.8
Mar. 1.7	32.46 -.30	30.1 1.1	46.32 .30	24.4 1.0	26.11 .28	68.0 0.8	46.36 .27	32.1 -0.2
11.7	32.75 -.29	31.2 1.0	46.61 .28	25.4 0.9	26.39 .27	68.6 0.6	46.73 .26	32.3 +0.5
21.7	33.03 -.27	32.1 0.9	46.89 .26	26.2 0.8	26.65 .25	69.0 +0.2	47.07 .23	33.0 1.1
31.6	33.29 -.24	32.9 0.8	47.14 .24	26.9 0.7	26.90 .23	69.1 0.0	47.39 .20	34.4 1.6
April 10.6	33.52 -.22	33.6 0.7	47.37 .22	27.5 0.6	27.12 .21	68.9 -0.3	47.67 .20	36.2 2.1
20.6	33.72 -.19	34.3 0.6	47.58 .19	28.0 0.4	27.32 .19	68.6 0.5	47.91 .22	38.5 2.4
30.6	33.90 .16	34.8 0.5	47.76 .16	28.3 0.3	27.49 .16	68.0 0.6	48.11 .18	41.1 2.7
May 10.5	34.05 .13	35.2 0.4	47.91 .14	28.6 0.2	27.64 .13	67.4 0.7	48.26 .13	43.9 2.9
20.5	34.17 .10	35.6 0.3	48.03 .11	28.7 0.1	27.75 .10	66.6 0.8	48.36 .08	46.9 2.0
30.5	34.25 .07	35.9 0.3	48.12 .07	28.9 +0.1	27.84 .07	65.7 0.9	48.42 +.03	49.9 2.0
June 9.5	34.30 +.03	36.1 0.2	48.17 +.04	28.9 0.0	27.90 .04	64.8 0.9	48.42 -.02	52.8 2.8
19.4	34.32 .00	36.3 0.1	48.19 .00	28.9 0.0	27.92 +.01	64.0 0.8	48.38 .07	55.6 2.7
29.4	34.30 -.04	36.4 +0.1	48.18 -.03	28.9 -0.1	27.91 -.03	63.2 0.8	48.29 .11	58.1 2.4
July 9.4	34.25 .07	36.4 0.0	48.13 .06	28.8 0.1	27.87 .06	62.4 0.7	48.15 .16	60.4 2.1
19.3	34.16 .10	36.4 -0.1	48.05 .10	28.7 0.1	27.79 .09	61.7 0.7	47.97 .20	62.2 1.7
29.3	34.05 .13	36.3 0.1	47.94 .13	28.5 0.2	27.69 .12	61.1 0.6	47.76 .22	63.7 1.8
Aug. 8.3	33.91 .16	36.1 0.2	47.80 .15	28.3 0.2	27.56 .14	60.6 0.5	47.51 .26	64.8 0.8
18.3	33.74 .17	35.8 0.3	47.65 .16	28.1 0.3	27.41 .16	60.2 0.4	47.24 .28	65.4 +0.4
28.2	33.57 .18	35.5 0.4	47.47 .17	27.7 0.3	27.25 .17	59.9 0.2	46.96 .29	65.5 -0.1
Sept. 7.2	33.39 .18	35.1 0.4	47.30 .17	27.4 0.4	27.08 .17	59.7 -0.1	46.67 .29	65.2 0.6
17.2	33.22 .16	34.7 0.5	47.13 .16	27.0 0.4	26.92 .16	59.7 0.0	46.38 .28	64.4 1.1
27.2	33.06 .14	34.2 0.5	46.97 .14	26.6 0.4	26.76 .14	59.8 +0.2	46.11 .26	63.0 1.6
Oct. 7.1	32.93 .11	33.7 0.6	46.84 .11	26.3 0.3	26.63 .12	60.1 0.4	45.86 .23	61.3 2.0
17.1	32.83 .07	33.3 0.4	46.74 .08	26.0 0.3	26.52 .08	60.5 0.5	45.65 .19	59.1 2.4
27.1	32.78 -.03	32.9 0.3	46.68 -.03	25.8 -0.1	26.46 -.04	61.1 0.7	45.48 .14	56.5 2.8
Nov. 6.0	32.78 +.02	32.6 -0.2	46.67 +.02	25.7 0.0	26.44 .00	62.0 0.9	45.37 .08	53.5 2.1
16.0	32.63 .08	32.5 0.0	46.72 .07	25.8 +0.2	26.46 +.03	63.0 1.1	45.32 -.02	50.3 2.3
26.0	32.93 .13	32.6 +0.2	46.81 .12	26.0 0.4	26.54 .10	64.2 1.2	45.33 +.04	46.9 2.5
Dec. 6.0	33.09 .18	32.9 0.4	46.96 .17	26.5 0.5	26.66 .12	65.6 1.6	45.41 .11	43.3 2.6
15.9	33.29 .22	33.4 0.6	47.16 .22	27.1 0.7	26.83 .19	67.2 1.6	45.55 .18	39.7 2.6
25.9	33.54 .27	34.1 0.8	47.40 .25	27.9 0.9	27.05 .22	68.8 1.7	45.76 .22	36.2 2.4
35.9	33.82 +.29	34.9 +0.9	47.67 +.29	28.8 +1.0	27.30 +.26	70.5 +1.7	46.02 +.28	32.9 -2.2

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Scorpii, (Antares.)		γ Draconis.		ζ Ophiuchi.		γ Herculis.	
	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.
	^h 16 ^m 21	[°] 26 ['] 7	^h 16 ^m 22	[°] 61 ['] 48	^h 16 ^m 29	[°] 10 ['] 17	^h 16 ^m 88	[°] 39 ['] 10
Jan. 1.9	17.53 +.27	56.7 +0.5	10.20 +.23	47.6 -0.4	52.06 +.24	40.0 +1.3	20.36 +.23	31.4 -0.3
11.9	17.82 -30	57.2 0.6	10.57 -39	44.4 3.0	52.32 -27	41.3 1.3	20.61 -27	28.3 3.9
21.8	18.13 -32	57.9 0.8	10.98 -44	41.6 2.6	52.59 -29	42.6 1.3	20.90 -30	25.5 3.6
31.8	18.45 -33	58.7 0.8	11.45 -49	39.3 2.0	52.89 -30	43.8 1.3	21.21 -32	23.1 2.1
Feb. 10.8	18.79 -33	59.6 0.9	11.95 -51	37.6 1.4	53.19 -30	45.0 1.1	21.55 -34	21.2 1.6
20.8	19.12 -33	60.5 0.9	12.47 -52	36.5 0.7	53.49 -30	46.0 0.9	21.89 -35	19.9 1.1
Mar. 1.7	19.45 -33	61.4 0.9	12.99 -51	36.2 -0.1	53.79 -29	46.9 0.8	22.24 -34	19.1 -0.4
11.7	19.76 -31	62.3 0.9	13.50 -49	36.4 +0.6	54.08 -28	47.6 0.6	22.57 -33	19.0 +0.2
21.7	20.06 -29	63.1 0.8	13.98 -46	37.3 1.2	54.36 -27	48.0 0.4	22.90 -31	19.4 0.8
31.7	20.34 -27	63.9 0.7	14.42 -41	38.9 1.8	54.62 -25	48.3 +0.2	23.20 -29	20.5 1.3
April 10.6	20.61 -25	64.6 0.7	14.81 -36	41.0 2.3	54.86 -23	48.3 0.0	23.48 -28	22.0 1.6
20.6	20.84 -22	65.3 0.6	15.13 -29	43.5 2.7	55.08 -21	48.2 -0.2	23.72 -26	24.0 2.2
30.6	21.05 -20	65.9 0.6	15.39 -22	46.3 3.0	55.28 -18	48.0 0.3	23.93 -19	26.3 2.5
May 10.5	21.24 -17	66.4 0.5	15.58 -15	49.4 3.1	55.45 -16	47.6 0.4	24.10 -18	28.9 2.7
20.5	21.39 -14	66.9 0.5	15.69 +0.8	52.6 3.2	55.60 -13	47.1 0.5	24.23 -11	31.7 2.8
30.5	21.51 -10	67.3 0.4	15.73 +0.0	55.8 3.2	55.71 -10	46.6 0.6	24.32 -07	34.5 2.8
June 9.5	21.59 -06	67.8 0.4	15.69 -07	59.0 3.1	55.79 -07	46.1 0.5	24.37 +0.2	37.3 2.6
19.4	21.63 +0.8	68.1 0.4	15.58 -16	61.9 3.8	55.84 +0.3	45.6 0.5	24.37 -0.2	40.0 2.6
29.4	21.64 -0.1	68.5 0.3	15.40 -21	64.7 3.6	55.85 -0.1	45.0 0.5	24.33 -07	42.6 2.4
July 9.4	21.61 -06	68.7 0.2	15.16 -27	67.1 3.2	55.83 -04	44.6 0.5	24.24 -11	44.9 2.1
19.4	21.54 -09	68.9 0.2	14.86 -33	69.1 1.8	55.77 -08	44.1 0.4	24.11 -14	46.9 1.8
29.3	21.43 -12	69.0 +0.1	14.50 -37	70.6 1.3	55.68 -11	43.7 0.4	23.95 -18	48.5 1.5
Aug. 8.3	21.30 -15	69.1 0.0	14.11 -41	71.7 0.8	55.55 -13	43.3 0.3	23.75 -21	49.8 1.1
18.3	21.14 -17	69.0 -0.1	13.68 -44	72.3 +0.3	55.41 -15	43.0 0.3	23.52 -23	50.7 0.6
28.2	20.95 -19	68.8 0.2	13.23 -46	72.4 -0.2	55.25 -17	42.8 0.3	23.26 -25	51.1 +0.2
Sept. 7.2	20.77 -19	68.5 0.3	12.78 -45	72.0 0.7	55.07 -17	42.6 0.3	23.03 -26	51.0 -0.3
17.2	20.58 -18	68.1 0.4	12.32 -44	71.1 1.2	54.90 -17	42.4 -0.1	22.77 -25	50.6 0.7
27.2	20.40 -16	67.7 0.5	11.89 -41	69.6 1.7	54.73 -16	42.3 0.0	22.54 -24	49.6 1.2
Oct. 7.1	20.25 -14	67.2 0.5	11.50 -37	67.7 2.2	54.59 -13	42.4 +0.1	22.30 -21	48.2 1.6
17.1	20.13 -10	66.6 0.5	11.15 -32	65.3 2.6	54.47 -10	42.5 0.2	22.10 -18	46.4 2.0
27.1	20.04 -08	66.1 0.5	10.86 -28	62.4 3.0	54.39 -06	42.8 0.3	21.94 -14	44.2 2.4
Nov. 6.1	20.01 +0.0	65.7 0.4	10.64 -18	59.3 3.3	54.35 -02	43.2 0.5	21.83 -09	41.6 2.7
16.0	20.03 +0.5	65.3 0.3	10.50 -09	55.8 3.6	54.36 +0.3	43.8 0.7	21.77 -03	38.7 3.0
26.0	20.11 +0.0	65.1 -0.1	10.45 +0.0	52.1 3.7	54.42 -08	44.5 0.8	21.77 +0.3	35.6 3.2
Dec. 6.0	20.24 +0.6	65.0 0.0	10.50 +0.9	48.4 3.8	54.52 -13	45.4 1.0	21.83 +0.9	32.3 3.4
15.9	20.42 -21	65.2 +0.3	10.63 -18	44.6 3.7	54.68 -18	46.5 1.1	21.94 -14	28.9 3.4
25.9	20.65 -25	65.5 0.4	10.86 -27	40.9 3.6	54.88 -22	47.7 1.2	22.11 -20	25.5 3.3
35.9	20.92 +2.8	66.0 +0.6	11.17 +2.5	37.4 -3.3	55.12 +2.3	48.9 +1.3	22.34 +2.4	22.2 -3.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ophiuchi.		δ Herculis.		ϵ^1 Herculis.		δ Ophiuchi.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination South.
	^h 16 ^m 51	[°] 9 ['] 34	^h 16 ^m 56	[°] 33 ['] 45	^h 17 ^m 8	[°] 14 ['] 32	^h 17 ^m 18	[°] 24 ['] 2
Jan. 1.9	23.65 +.30	63.0 -2.2	42.03 +.20	43.5 -2.1	36.10 +.19	41.3 -2.4	16.86 +.22	52.2 +0.2
11.9	23.87 .24	60.9 2.1	42.25 .24	40.5 2.9	36.31 .22	39.0 2.3	17.09 .25	52.6 0.4
21.9	24.13 .26	58.8 1.9	42.51 .27	37.8 2.6	36.55 .25	36.8 2.1	17.36 .28	53.0 0.4
31.8	24.40 .28	57.0 1.7	42.80 .30	35.4 2.2	36.81 .27	34.8 1.8	17.65 .30	53.5 0.5
Feb. 10.8	24.68 .29	55.5 1.4	43.11 .32	33.4 1.7	37.09 .28	33.2 1.5	17.95 .31	54.0 0.5
20.8	24.97 .29	54.2 1.1	43.43 .32	31.9 1.2	37.38 .29	31.8 1.1	18.27 .33	54.5 0.5
Mar. 1.8	25.26 .29	53.4 0.7	43.75 .32	31.0 -0.6	37.67 .29	30.9 0.7	18.59 .32	54.9 0.5
11.7	25.55 .28	52.9 -0.3	44.08 .32	30.7 0.0	37.96 .29	30.4 -0.3	18.91 .32	55.4 0.4
21.7	25.82 .27	52.8 +0.1	44.39 .30	31.0 +0.5	38.24 .28	30.4 +0.2	19.22 .31	55.7 0.3
31.7	26.09 .26	53.2 0.5	44.68 .29	31.7 1.0	38.52 .28	30.8 0.4	19.52 .29	56.0 0.3
April 10.7	26.33 .24	53.8 0.3	44.96 .26	33.0 1.4	38.77 .26	31.6 0.9	19.82 .28	56.3 0.2
20.6	26.56 .22	54.8 1.1	45.21 .23	34.8 1.9	39.01 .23	32.7 1.3	20.09 .27	56.5 0.2
30.6	26.76 .19	56.0 1.3	45.43 .20	36.9 2.3	39.23 .20	34.2 1.6	20.35 .24	56.7 0.2
May 10.6	26.94 .16	57.5 1.5	45.62 .17	39.3 2.5	39.42 .18	35.9 1.8	20.58 .22	56.8 0.1
20.5	27.09 .13	59.0 1.6	45.77 .13	41.9 2.6	39.58 .13	37.7 1.9	20.78 .19	57.0 0.1
30.5	27.21 .10	60.7 1.7	45.88 .09	44.6 2.7	39.72 .11	39.6 1.9	20.96 .16	57.1 0.1
June 9.5	27.29 .07	62.4 1.7	45.95 .06	47.3 2.7	39.81 .06	41.6 1.9	21.09 .12	57.2 0.2
19.5	27.35 +.03	64.0 1.6	45.98 +.01	49.0 2.6	39.88 .03	43.5 1.9	21.20 .06	57.4 0.2
29.4	27.36 .00	65.6 1.5	45.97 -0.08	52.4 2.4	39.90 +.01	45.3 1.8	21.26 +.04	57.6 0.2
July 9.4	27.34 -.04	67.0 1.4	45.91 .06	54.7 2.3	39.89 -.03	47.1 1.6	21.28 .00	57.8 0.2
19.4	27.28 .06	68.3 1.2	45.81 .12	56.8 1.9	39.84 .07	48.6 1.4	21.25 -.06	58.0 0.2
29.4	27.19 .11	69.4 1.0	45.68 .15	58.5 1.6	39.76 .10	49.9 1.2	21.19 .08	58.2 0.2
Aug. 8.3	27.07 .13	70.3 0.8	45.51 .16	59.9 1.2	39.64 .12	51.0 1.0	21.09 .12	58.3 0.1
18.3	26.93 .16	70.9 0.6	45.32 .21	60.9 0.8	39.49 .16	51.8 0.7	20.95 .16	58.5 +0.1
28.3	26.76 .17	71.4 0.3	45.10 .28	61.5 +0.4	39.32 .18	52.4 0.4	20.78 .17	58.5 0.0
Sept. 7.2	26.58 .18	71.5 +0.1	44.87 .24	61.7 0.0	39.13 .19	52.6 +0.1	20.60 .19	58.5 0.0
17.2	26.39 .18	71.5 -0.2	44.63 .24	61.4 -0.5	38.94 .19	52.6 -0.2	20.41 .19	58.4 -0.1
27.2	26.21 .17	71.2 0.5	44.40 .22	60.8 0.9	38.75 .18	52.3 0.5	20.22 .19	58.3 0.2
Oct. 7.2	26.05 .15	70.6 0.7	44.18 .20	59.7 1.3	38.58 .17	51.7 0.8	20.04 .17	58.1 0.2
17.1	25.91 .13	69.7 1.0	43.99 .18	58.2 1.7	38.42 .14	50.8 1.1	19.88 .14	57.8 0.3
27.1	25.80 .09	68.6 1.2	43.83 .14	56.2 2.1	38.29 .11	49.5 1.4	19.76 .10	57.6 0.3
Nov. 6.1	25.73 -.03	67.3 1.5	43.71 .09	54.0 2.4	38.20 .07	48.0 1.7	19.67 .06	57.3 0.2
16.1	25.71 .00	65.7 1.7	43.64 -.04	51.3 2.7	38.16 -.02	46.2 1.9	19.64 -.01	57.1 0.2
26.0	25.73 +.05	63.8 1.9	43.63 +.01	48.5 3.0	38.16 +.03	44.2 2.1	19.65 +.04	57.0 -0.1
Dec. 6.0	25.80 .10	61.8 2.1	43.67 .06	45.4 3.1	38.21 .06	42.0 2.3	19.72 .10	56.9 0.0
16.0	25.92 .14	59.7 2.2	43.77 .12	42.2 3.2	38.31 .12	39.7 2.4	19.85 .15	57.0 +0.1
25.9	26.09 .18	57.5 2.2	43.92 .17	39.0 3.2	38.46 .17	37.2 2.4	20.01 .19	57.1 0.2
35.9	26.29 +.22	55.3 -2.2	44.12 +.22	35.9 -3.0	38.65 +.21	34.8 -2.4	20.23 +.22	57.4 +0.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Draconis.		α Ophiuchi.		μ Herculis.		γ Draconis.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h 17 27	^m 52° 23'	^h 17 28	^m 12° 39'	^h 17 41	^m 27° 47'	^h 17 53	^m 51° 30'
Jan. 2.0	24.62 +.18	63.4 -3.5	46.78 +.17	37.6 -2.3	15.81 +.14	63.9 -2.9	30.30 +.12	24.4 -2.6
11.9	24.82 -.24	60.0 3.3	46.97 -.21	35.3 2.2	15.98 -.19	61.0 2.8	30.46 -.20	20.9 2.4
21.9	25.09 -.29	56.8 3.0	47.19 -.28	33.2 2.0	16.20 -.22	58.3 2.6	30.69 -.22	17.6 2.1
31.9	25.41 -.34	53.9 2.6	47.44 -.26	31.3 1.8	16.44 -.26	55.9 2.2	30.97 -.20	14.6 2.8
Feb. 10.8	25.76 -.37	51.6 2.1	47.71 -.27	29.6 1.5	16.71 -.28	53.8 1.9	31.29 -.24	12.1 2.2
20.8	26.15 -.39	49.8 1.5	47.99 -.28	28.3 1.1	17.00 -.29	52.1 1.4	31.65 -.28	10.0 1.7
Mar. 1.8	26.55 -.41	48.6 0.9	48.27 -.29	27.4 0.7	17.30 -.30	50.9 0.9	32.03 -.29	8.6 1.1
11.8	26.96 -.41	48.0 -0.2	48.56 -.29	26.8 -0.3	17.60 -.30	50.3 -0.4	32.43 -.40	7.8 -0.5
21.7	27.36 -.40	48.2 +0.5	48.75 -.28	26.7 +0.1	17.90 -.30	50.2 +0.2	32.83 -.40	7.6 +0.2
31.7	27.76 -.38	48.9 1.1	49.12 -.27	27.0 0.6	18.20 -.29	50.6 0.7	33.22 -.39	8.1 0.6
April 10.7	28.13 -.35	50.3 1.6	49.39 -.26	27.7 0.9	18.49 -.28	51.5 1.2	33.60 -.37	9.2 1.4
20.7	28.46 -.32	52.2 2.1	49.64 -.24	28.8 1.2	18.75 -.26	52.9 1.6	33.96 -.34	10.9 1.9
30.6	28.76 -.28	54.5 2.5	49.87 -.22	30.2 1.6	19.00 -.24	54.7 1.9	34.28 -.30	13.0 2.4
May 10.6	29.02 -.22	57.3 2.9	50.08 -.20	31.7 1.7	19.22 -.21	56.8 2.2	34.56 -.26	15.6 2.7
20.6	29.22 -.18	60.3 3.1	50.26 -.17	33.5 1.8	19.42 -.18	59.1 2.4	34.80 -.21	18.5 2.0
30.5	29.37 -.12	63.4 2.2	50.41 -.14	35.4 1.9	19.58 -.14	61.6 2.6	34.98 -.16	21.6 2.2
June 9.5	29.47 +.06	66.6 2.2	50.53 -.10	37.3 1.9	19.70 -.10	64.2 2.6	35.11 -.10	24.8 2.2
19.5	29.50 +.00	69.8 2.1	50.61 -.07	39.2 1.9	19.78 +.06	66.8 2.5	35.19 +.04	28.0 2.2
29.5	29.47 -0.06	72.9 2.0	50.66 +.08	41.0 1.8	19.82 +.02	69.2 2.4	35.20 -0.02	31.2 2.1
July 9.4	29.38 -.19	75.8 2.7	50.67 -0.01	42.7 1.6	19.82 -0.02	71.6 2.2	35.15 -.06	34.2 2.9
19.4	29.24 -.17	78.4 2.4	50.64 -.06	44.2 1.4	19.77 -.07	73.7 2.0	35.04 -.14	37.0 2.7
29.4	29.04 -.22	80.6 2.1	50.57 -.09	45.6 1.2	19.68 -.11	75.6 1.7	34.88 -.19	39.5 2.2
Aug. 8.4	28.79 -.27	82.5 1.7	50.46 -.12	46.7 1.0	19.56 -.14	77.2 1.4	34.66 -.24	41.7 2.0
18.3	28.51 -.30	84.0 1.2	50.32 -.16	47.6 0.8	19.40 -.17	78.5 1.1	34.40 -.28	43.4 1.5
28.3	28.19 -.33	85.0 0.8	50.16 -.17	48.2 0.6	19.21 -.20	79.4 0.7	34.10 -.31	44.8 1.1
Sept. 7.3	27.85 -.35	85.5 +0.3	49.98 -.19	48.6 +0.2	19.00 -.22	79.9 +0.4	33.78 -.34	45.6 0.6
17.2	27.49 -.36	85.5 -0.3	49.79 -.19	48.6 -0.1	18.78 -.22	80.1 0.0	33.43 -.35	46.0 +0.1
27.2	27.14 -.35	85.0 0.7	49.60 -.19	48.4 0.4	18.56 -.22	79.9 -0.4	33.08 -.35	45.8 -0.4
Oct. 7.2	26.80 -.33	84.0 1.3	49.42 -.17	47.9 0.6	18.34 -.21	79.2 0.8	32.74 -.34	45.2 0.9
17.2	26.48 -.30	82.5 1.8	49.26 -.15	47.1 0.9	18.14 -.19	78.2 1.2	32.41 -.31	44.0 1.4
27.1	26.19 -.26	80.5 2.2	49.12 -.12	46.1 1.2	17.97 -.16	76.8 1.6	32.11 -.28	42.3 1.9
Nov. 6.1	25.96 -.21	78.1 2.6	49.02 -.08	44.7 1.5	17.83 -.12	75.0 2.0	31.86 -.22	40.2 2.4
16.1	25.78 -.14	75.2 3.0	48.96 -.04	43.1 1.7	17.74 -.07	72.8 2.2	31.66 -.17	37.6 2.8
26.1	25.67 -.08	72.1 3.3	48.94 +0.01	41.2 2.0	17.68 -.02	70.4 2.6	31.51 -.11	34.7 2.1
Dec. 6.0	25.63 -.01	68.7 3.5	48.98 -.06	39.2 2.1	17.69 +.03	67.7 2.8	31.43 -.04	31.4 2.4
16.0	25.66 +.06	65.1 3.6	49.06 -.10	37.0 2.2	17.74 +.08	64.8 2.9	31.42 +.03	28.0 2.5
26.0	25.76 +.13	61.4 3.6	49.19 -.15	34.7 2.2	17.84 +.13	61.9 3.0	31.49 +.09	24.4 2.6
35.9	25.92 +.20	57.9 -3.5	49.36 +.19	32.4 -2.3	17.99 +.17	58.9 -2.9	31.61 +.16	20.8 -2.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ^2 Sagittarii.		μ^1 Sagittarii.		η Serpentis.		1 Aquilæ. (3 H. Scuti Sob.)	
	Right Ascension.	Declination South.	Right Ascension.	Declination South.	Right Ascension.	Declination South.	Right Ascension.	Declination South.
	^h 17 57	[°] 30 25	^h 18 5	[°] 21 5	^h 18 14	[°] 2 55	^h 18 27	[°] 8 19
Jan. 2.0	17.77 +.19	11.8 -0.3	50.31 +.16	17.1 +0.3	27.03 +.14	43.0 +1.3	59.61 +.13	54.9 +0.9
11.9	17.97 -.29	11.6 0.2	50.49 -.20	17.4 0.3	27.19 -.17	44.4 1.3	59.76 -.17	55.9 1.0
21.9	18.22 -.26	11.4 0.1	50.71 -.32	17.7 0.3	27.38 -.20	45.7 1.3	59.95 -.20	56.8 0.9
31.9	18.50 -.29	11.3 -0.1	50.96 -.26	18.0 0.3	27.60 -.23	46.9 1.1	60.16 -.22	57.7 0.8
Feb. 10.9	18.79 -.31	11.3 0.0	51.23 -.28	18.3 0.3	27.84 -.25	48.0 1.0	60.40 -.25	58.5 0.7
20.8	19.11 -.22	11.3 0.0	51.52 -.29	18.5 0.2	28.09 -.26	48.8 0.8	60.65 -.26	59.1 0.5
Mar. 1.8	19.44 -.22	11.3 0.0	51.82 -.30	18.7 0.2	28.36 -.28	49.5 0.5	60.92 -.28	59.5 0.3
11.8	19.77 -.22	11.4 +0.1	52.12 -.21	18.8 +0.1	28.65 -.28	49.8 +0.2	61.20 -.28	59.8 +0.1
21.8	20.10 -.22	11.4 0.1	52.43 -.21	18.9 0.0	28.93 -.28	50.0 0.0	61.49 -.29	59.8 -0.1
31.7	20.43 -.22	11.5 0.1	52.74 -.21	18.8 -0.1	29.21 -.28	49.8 -0.3	61.78 -.29	59.6 0.3
April 10.7	20.76 -.22	11.6 0.1	53.04 -.20	18.7 0.2	29.49 -.28	49.4 0.6	62.07 -.29	59.2 0.5
20.7	21.07 -.20	11.7 0.1	53.33 -.29	18.4 0.2	29.76 -.27	48.7 0.8	62.35 -.28	58.6 0.7
30.6	21.37 -.29	11.9 0.2	53.61 -.27	18.2 0.3	30.02 -.26	47.8 1.0	62.62 -.26	57.8 0.8
May 10.6	21.64 -.26	12.0 0.2	53.87 -.25	17.9 0.3	30.27 -.23	46.8 1.1	62.88 -.25	56.9 0.9
20.6	21.89 -.24	12.3 0.3	54.11 -.22	17.7 0.3	30.49 -.21	45.6 1.2	63.12 -.22	55.9 1.0
30.6	22.12 -.20	12.6 0.3	54.33 -.20	17.4 0.3	30.69 -.18	44.4 1.2	63.33 -.20	55.0 1.0
June 9.5	22.30 -.17	13.0 0.4	54.51 -.16	17.2 0.2	30.86 -.16	43.2 1.2	63.52 -.17	54.0 1.0
19.5	22.45 -.18	13.4 0.5	54.66 -.13	17.0 0.1	31.00 -.12	42.0 1.2	63.67 -.13	53.0 0.9
29.5	22.56 -.08	13.9 0.6	54.76 -.06	17.0 -0.1	31.09 -.08	40.9 1.1	63.79 -.10	52.1 0.8
July 9.5	22.61 +.03	14.4 0.6	54.82 +.04	16.9 0.0	31.15 +.04	39.8 1.0	63.86 -.05	51.3 0.7
19.4	22.62 -.01	15.0 0.6	54.84 -.00	17.0 +0.1	31.17 -.00	38.9 0.9	63.89 +.01	50.7 0.6
29.4	22.59 -.00	15.5 0.6	54.82 -.05	17.1 0.1	31.15 -.04	38.1 0.7	63.88 -.03	50.1 0.5
Aug. 8.4	22.51 -.10	16.1 0.5	54.75 -.09	17.2 0.1	31.08 -.08	37.4 0.6	63.84 -.07	49.7 0.4
18.3	22.38 -.14	16.5 0.4	54.64 -.12	17.4 0.2	30.98 -.12	36.9 0.4	63.74 -.11	49.3 0.3
28.3	22.23 -.17	16.9 0.4	54.50 -.15	17.5 0.1	30.85 -.15	36.5 0.3	63.62 -.14	49.1 0.2
Sept. 7.3	22.04 -.19	17.2 0.3	54.33 -.17	17.6 0.1	30.69 -.17	36.3 -0.2	63.47 -.16	49.0 -0.1
17.3	21.84 -.20	17.4 +0.1	54.15 -.19	17.8 0.1	30.51 -.18	36.2 0.0	63.30 -.18	49.0 0.0
27.2	21.63 -.29	17.4 0.0	53.96 -.19	17.8 +0.1	30.33 -.19	36.3 +0.1	63.12 -.18	49.0 +0.1
Oct. 7.2	21.43 -.19	17.4 -0.2	53.77 -.18	17.9 0.0	30.15 -.18	36.5 0.3	62.94 -.18	49.2 0.2
17.2	21.25 -.17	17.1 0.3	53.60 -.16	17.9 0.0	29.98 -.16	36.8 0.4	62.77 -.16	49.5 0.3
27.2	21.09 -.14	16.8 0.4	53.45 -.13	17.9 0.0	29.83 -.13	37.4 0.6	62.62 -.14	49.8 0.4
Nov. 6.1	20.97 -.10	16.4 0.4	53.33 -.09	17.8 0.0	29.71 -.10	38.0 0.7	62.49 -.11	50.3 0.5
16.1	20.90 -.06	15.9 0.5	53.26 -.06	17.8 0.0	29.63 -.06	38.8 0.9	62.40 -.07	50.9 0.6
26.1	20.87 -.00	15.4 0.6	53.23 -.00	17.8 0.0	29.59 -.02	39.8 1.0	62.36 -.03	51.6 0.7
Dec. 6.0	20.90 +.06	14.9 0.5	53.25 +.06	17.9 +0.1	29.60 +.03	40.9 1.2	62.35 +.02	52.3 0.8
6.0	20.99 -.11	14.5 0.4	53.32 -.09	18.0 0.2	29.65 -.07	42.1 1.3	62.39 -.06	53.2 0.9
26.0	21.12 -.16	14.1 0.3	53.44 -.14	18.2 0.2	29.74 -.11	43.4 1.3	62.48 -.11	54.1 1.0
36.0	21.31 +.21	13.9 -0.2	53.60 +.18	18.4 +0.3	29.87 +.15	44.8 +1.3	62.61 +.15	55.1 +1.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Lyrae. (Vega.)		β Lyrae.		σ Sagittarii.		ζ Aquila.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.
	^h 18 32	^m 38 39	^h 18 45	^m 38 12	^h 18 47	^m 26 27	^h 18 59	^m 13 40
Jan. 2.0	26.24 +.09	51.9 -3.2	10.58 +.08	46.5 -3.0	2.76 +.18	20.2 -0.3	18.87 +.08	17.5 -2.1
12.0	26.36 -.14	48.8 3.1	10.68 -.12	43.5 3.0	2.91 -.17	19.9 0.3	18.97 -.12	15.4 2.1
21.9	26.52 -.18	45.7 3.0	10.83 -.17	40.6 2.8	3.10 -.20	19.7 0.2	19.11 -.16	13.3 2.0
31.9	26.72 -.22	42.8 2.7	11.01 -.21	37.9 2.6	3.32 -.24	19.5 0.2	19.28 -.19	11.4 1.8
Feb. 10.9	26.97 -.26	40.3 2.3	11.24 -.24	35.5 2.2	3.57 -.26	19.3 0.2	19.49 -.21	9.7 1.6
20.9	27.24 -.29	38.2 1.9	11.49 -.26	33.4 1.8	3.84 -.28	19.0 0.3	19.71 -.24	8.2 1.3
Mar. 1.8	27.54 -.31	36.6 1.3	11.76 -.29	31.8 1.3	4.13 -.30	18.8 0.3	19.96 -.26	7.1 0.9
11.8	27.86 -.32	35.5 0.8	12.06 -.30	30.7 0.8	4.44 -.31	18.5 0.3	20.22 -.27	6.4 0.6
21.8	28.19 -.33	35.0 -0.3	12.37 -.31	30.2 -0.3	4.75 -.32	18.1 0.4	20.50 -.28	6.1 -0.1
31.8	28.52 -.33	35.2 +0.4	12.68 -.31	30.3 +0.3	5.07 -.32	17.8 0.4	20.78 -.28	6.3 +0.4
April 10.7	28.85 -.33	35.9 1.0	13.00 -.31	30.9 0.9	5.39 -.32	17.4 0.4	21.06 -.28	6.8 0.8
20.7	29.17 -.31	37.2 1.5	13.31 -.30	32.0 1.4	5.71 -.32	17.0 0.4	21.35 -.28	7.8 1.1
30.7	29.47 -.29	38.9 2.0	13.60 -.29	33.6 1.8	6.02 -.31	16.6 0.4	21.63 -.27	9.0 1.4
May 10.6	29.75 -.27	41.1 2.4	13.88 -.27	35.7 2.2	6.32 -.29	16.3 0.3	21.89 -.26	10.6 1.7
20.6	30.00 -.28	43.6 2.7	14.13 -.24	38.0 2.5	6.60 -.27	16.0 0.3	22.14 -.24	12.5 1.9
30.6	30.22 -.20	46.4 3.0	14.35 -.20	40.6 2.7	6.86 -.24	15.8 0.2	22.37 -.21	14.5 2.1
June 9.6	30.39 -.18	49.3 3.0	14.54 -.17	43.4 2.8	7.08 -.21	15.7 -0.1	22.56 -.18	16.6 2.1
19.5	30.53 -.11	52.4 3.0	14.69 -.12	46.3 2.9	7.27 -.17	15.7 +0.1	22.73 -.16	18.7 2.1
29.5	30.61 -.06	55.4 3.0	14.79 -.08	49.1 2.8	7.43 -.18	15.8 0.2	22.86 -.11	20.9 2.1
July 9.5	30.64 +.01	58.3 2.9	14.84 +.08	52.0 2.7	7.53 -.08	16.0 0.3	22.95 -.07	22.9 2.0
19.5	30.62 -.04	61.1 2.7	14.85 -.02	54.6 2.6	7.59 +.04	16.3 0.4	22.99 +.02	24.8 1.8
29.4	30.56 -.09	63.7 2.4	14.81 -.06	57.1 2.3	7.60 -.01	16.7 0.4	22.99 -.02	26.6 1.7
Aug. 8.4	30.44 -.14	65.9 2.1	14.72 -.11	59.3 2.1	7.57 -.06	17.1 0.4	22.95 -.06	28.1 1.4
18.4	30.28 -.18	67.9 1.8	14.59 -.16	61.2 1.7	7.49 -.10	17.6 0.5	22.87 -.10	29.5 1.2
28.3	30.09 -.21	69.5 1.4	14.42 -.18	62.8 1.4	7.37 -.14	18.0 0.5	22.75 -.12	30.5 0.9
Sept. 7.3	29.86 -.24	70.7 1.0	14.22 -.21	64.0 1.0	7.21 -.17	18.5 0.4	22.60 -.16	31.3 0.7
17.3	29.61 -.26	71.4 0.5	14.00 -.22	64.8 0.6	7.03 -.19	18.9 0.3	22.43 -.18	31.9 0.4
27.3	29.35 -.26	71.7 +0.1	13.76 -.24	65.2 +0.2	6.84 -.20	19.2 0.3	22.24 -.19	32.1 +0.1
Oct. 7.2	29.08 -.26	71.5 -0.4	13.52 -.24	65.1 -0.5	6.64 -.19	19.4 0.2	22.05 -.19	32.0 -0.2
17.2	28.83 -.25	70.9 0.9	13.28 -.23	64.6 0.7	6.45 -.18	19.5 +0.1	21.86 -.18	31.7 0.6
27.2	28.59 -.23	69.8 1.3	13.06 -.21	63.7 1.2	6.28 -.16	19.5 0.0	21.68 -.16	31.0 0.8
Nov. 6.2	28.38 -.19	68.3 1.8	12.87 -.18	62.3 1.6	6.13 -.18	19.4 -0.1	21.53 -.14	30.1 1.1
16.1	28.21 -.15	66.3 2.2	12.71 -.14	60.5 2.0	6.03 -.09	19.3 0.2	21.41 -.11	28.9 1.4
26.1	28.09 -.10	63.9 2.5	12.59 -.10	58.4 2.3	5.96 -.04	19.1 0.2	21.32 -.07	27.4 1.6
Dec. 6.1	28.01 -.05	61.2 2.8	12.52 -.05	55.9 2.6	5.94 +.01	18.8 0.2	21.27 -.03	25.7 1.8
16.0	27.99 -.00	58.3 3.0	12.49 -.00	53.2 2.8	5.97 -.06	18.6 0.2	21.26 +.02	23.8 2.0
26.0	28.02 +.06	55.1 3.2	12.52 +.05	50.2 3.0	6.05 -.10	18.3 0.2	21.30 -.06	21.7 2.1
36.0	28.10 +.11	51.9 -3.2	12.59 +.10	47.2 -3.0	6.18 +.15	18.1 -0.2	21.38 +.10	19.6 -2.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	<i>d</i> Sagittarii.		<i>δ</i> Aquilæ.		<i>α</i> Aquilæ.		<i>γ</i> Aquilæ.	
	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.
	^h 19 ^m 9	[°] 19 ['] 10	^h 19 ^m 18	[°] 2 ['] 51	^h 19 ^m 29	[°] 7 ['] 18	^h 19 ^m 39	[°] 10 ['] 17
Jan. 2.0	52.76 +.10	61.4 +0.2	48.83 +.07	20.5 -1.6	45.56 +.07	61.3 +0.8	57.40 +.04	44.1 -1.8
12.0	52.88 .14	61.6 0.1	48.92 .11	19.1 1.4	45.65 .11	62.1 0.8	57.47 .08	42.3 1.8
22.0	53.03 .17	61.7 0.1	49.04 .14	17.6 1.4	45.77 .14	62.9 0.8	57.57 .12	40.5 1.7
31.9	53.22 .20	61.8 +0.1	49.20 .17	16.3 1.2	45.93 .17	63.6 0.7	57.70 .16	38.8 1.6
Feb. 10.9	53.44 .22	61.8 0.0	49.39 .20	15.2 1.1	46.11 .20	64.2 0.5	57.87 .18	37.3 1.4
20.9	53.68 .26	61.8 -0.1	49.61 .22	14.2 0.8	46.32 .22	64.7 0.4	58.06 .21	36.0 1.1
Mar. 1.9	53.94 .27	61.6 0.2	49.84 .24	13.5 0.8	46.56 .24	64.9 +0.2	58.28 .22	35.0 0.8
11.8	54.22 .29	61.4 0.2	50.09 .26	13.1 -0.2	46.81 .26	65.0 -0.1	58.52 .26	34.4 0.6
21.8	54.51 .30	61.0 0.4	50.36 .27	13.0 +0.1	47.08 .27	64.8 0.3	58.78 .28	34.1 -0.1
31.8	54.81 .30	60.5 0.6	50.64 .28	13.2 0.4	47.35 .28	64.4 0.5	59.05 .28	34.2 +0.3
April 10.8	55.11 .31	59.9 0.6	50.92 .28	13.8 0.7	47.64 .29	63.7 0.7	59.33 .28	34.7 0.7
20.7	55.42 .30	59.3 0.7	51.20 .28	14.7 1.0	47.93 .29	62.9 0.9	59.62 .29	35.6 1.0
30.7	55.72 .30	58.5 0.7	51.49 .28	15.8 1.3	48.22 .29	61.9 1.1	59.90 .28	36.8 1.3
May 10.7	56.01 .29	57.8 0.7	51.76 .27	17.2 1.4	48.51 .28	60.7 1.2	60.18 .28	38.3 1.4
20.6	56.30 .27	57.1 0.7	52.02 .25	18.7 1.6	48.78 .27	59.5 1.3	60.46 .26	40.0 1.8
30.6	56.55 .25	56.4 0.6	52.27 .23	20.3 1.7	49.04 .28	58.2 1.3	60.71 .24	41.9 2.0
June 9.6	56.79 .22	55.8 0.6	52.49 .20	22.0 1.7	49.27 .22	56.9 1.3	60.94 .22	43.9 2.0
19.6	56.99 .18	55.3 0.6	52.67 .17	23.7 1.7	49.48 .19	55.7 1.2	61.14 .18	46.0 2.1
29.5	57.15 .14	54.9 0.4	52.83 .12	25.4 1.6	49.65 .16	54.6 1.1	61.31 .16	48.0 2.0
July 9.5	57.28 .10	54.6 0.2	52.94 .09	26.9 1.5	49.78 .11	53.6 1.0	61.44 .11	50.0 1.9
19.5	57.35 .06	54.4 -0.1	53.01 .06	28.4 1.4	49.86 .07	52.7 0.8	61.52 .06	51.9 1.8
29.5	57.39 +.01	54.4 0.0	53.04 +.01	29.7 1.3	49.91 +.02	51.9 0.7	61.56 +.02	53.6 1.6
Aug. 8.4	57.37 -.04	54.4 +0.1	53.02 -.04	30.7 1.0	49.91 -.02	51.3 0.6	61.56 -.02	55.2 1.4
18.4	57.31 .08	54.6 0.2	52.97 .08	31.7 0.8	49.87 .06	50.9 0.4	61.51 .07	56.5 1.2
28.4	57.22 .12	54.8 0.2	52.87 .11	32.4 0.6	49.79 .10	50.6 0.3	61.43 .10	57.6 1.0
Sept. 7.3	57.08 .12	55.1 0.2	52.75 .14	32.9 0.4	49.67 .12	50.4 -0.1	61.31 .14	58.5 0.7
17.3	56.92 .17	55.4 0.2	52.59 .16	33.2 +0.2	49.52 .16	50.4 0.0	61.16 .16	59.1 0.6
27.3	56.74 .18	55.7 0.2	52.42 .17	33.4 0.0	49.36 .17	50.5 +0.1	60.99 .17	59.4 +0.2
Oct. 7.3	56.56 .18	56.0 0.2	52.24 .18	33.3 -0.2	49.18 .18	50.7 0.2	60.81 .18	59.5 0.0
17.2	56.37 .18	56.2 0.2	52.07 .17	33.0 0.4	49.01 .17	51.0 0.4	60.63 .18	59.3 -0.2
27.2	56.20 .16	56.4 0.2	51.90 .16	32.5 0.6	48.84 .16	51.4 0.4	60.45 .17	58.9 0.6
Nov. 6.2	56.06 .12	56.6 0.2	51.75 .12	31.9 0.8	48.69 .14	51.9 0.5	60.29 .16	58.2 0.8
16.2	55.94 .10	56.8 0.2	51.63 .10	31.0 0.9	48.57 .11	52.5 0.8	60.15 .12	57.2 1.1
26.1	55.86 .06	57.0 0.2	51.54 .07	30.0 1.1	48.48 .07	53.1 0.7	60.05 .09	56.0 1.3
Dec. 6.1	55.83 -.02	57.2 0.2	51.49 -.08	28.8 1.3	48.43 -.08	53.8 0.8	59.97 .06	54.6 1.6
16.1	55.83 +.08	57.3 0.2	51.48 +.01	27.5 1.4	48.41 +.01	54.6 0.8	59.94 -.02	53.1 1.7
26.0	55.89 .07	57.5 0.2	51.51 .06	26.1 1.4	48.44 .08	55.4 0.8	59.94 +.02	51.3 1.8
36.0	55.98 +.11	57.7 +0.2	51.58 +.09	24.6 -1.5	48.51 +.09	56.3 +0.8	59.98 +.06	49.5 -1.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Aquilæ. (Alkair.)		β Aquilæ.		γ Aquilæ.		ϵ^2 Capricorni.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination South.
	^h 19 44	^m 8 31	^h 19 48	^m 6 4	^h 19 57	^m 6 54	^h 20 10	^m 12 56
Jan. 2.0	18.91 +04	25.3 -1.7	48.10 +04	51.0 -1.6	39.94 +08	32.7 -1.6	41.95 +08	62.9 +0.4
12.0	18.97 -08	23.6 1.7	48.16 -08	49.4 1.6	39.99 -07	31.1 1.6	42.00 -07	63.3 0.4
22.0	19.07 -12	22.0 1.6	48.25 -11	47.9 1.5	40.08 -10	29.5 1.6	42.08 -10	63.6 0.3
Feb. 1.0	19.20 -15	20.4 1.6	48.38 -15	46.4 1.4	40.20 -18	28.1 1.4	42.20 -14	63.8 0.3
10.9	19.37 -18	19.0 1.3	48.54 -17	45.1 1.2	40.36 -16	26.8 1.2	42.36 -17	64.0 +0.1
20.9	19.56 -20	17.8 1.1	48.72 -20	44.0 1.0	40.53 -19	25.7 1.0	42.54 -19	64.0 -0.1
Mar. 1.9	19.77 -23	16.9 0.8	48.94 -22	43.2 0.7	40.73 -22	24.8 0.7	42.74 -22	63.8 0.2
11.9	20.01 -26	16.3 -0.4	49.17 -24	42.7 -0.3	40.96 -24	24.3 -0.4	42.97 -24	63.5 0.4
21.8	20.26 -28	16.1 0.0	49.42 -26	42.5 0.0	41.21 -26	24.1 0.0	43.22 -26	63.0 0.6
31.8	20.53 -28	16.2 +0.3	49.69 -27	42.7 +0.4	41.47 -27	24.2 +0.4	43.49 -28	62.3 0.6
April 10.8	20.82 -29	16.7 0.7	49.97 -28	43.2 0.7	41.75 -28	24.8 0.7	43.77 -29	61.4 0.9
20.7	21.10 -29	17.6 1.0	50.26 -29	44.1 1.0	42.03 -29	25.6 1.0	44.07 -29	60.4 1.1
30.7	21.39 -29	18.8 1.3	50.54 -29	45.2 1.3	42.32 -29	26.8 1.3	44.37 -30	59.3 1.2
May 10.7	21.68 -28	20.3 1.6	50.83 -28	46.7 1.5	42.61 -28	28.3 1.6	44.67 -30	58.1 1.3
20.7	21.95 -27	22.0 1.8	51.10 -27	48.3 1.8	42.89 -27	29.9 1.7	44.97 -29	56.8 1.2
30.6	22.21 -24	23.9 1.9	51.36 -25	50.1 1.8	43.15 -26	31.7 1.9	45.25 -28	55.6 1.2
June 9.6	22.44 -22	25.8 2.0	51.60 -22	51.9 1.9	43.39 -23	33.6 1.9	45.52 -26	54.4 1.2
19.6	22.65 -19	27.8 2.0	51.81 -19	53.8 1.9	43.61 -20	35.6 1.9	45.76 -23	53.3 1.0
29.6	22.82 -15	29.8 2.0	51.99 -16	55.7 1.8	43.79 -16	37.5 1.9	45.97 -19	52.3 0.9
July 9.5	22.95 -11	31.8 1.9	52.12 -12	57.5 1.7	43.94 -13	39.4 1.8	46.14 -15	51.5 0.8
19.5	23.08 -07	33.6 1.7	52.22 -07	59.1 1.6	44.04 -08	41.1 1.7	46.27 -11	50.8 0.6
29.5	23.09 +03	35.2 1.6	52.27 +03	60.6 1.4	44.11 +04	42.8 1.5	46.36 -06	50.3 0.4
Aug. 8.4	23.10 -02	36.7 1.4	52.28 -02	62.0 1.3	44.12 -01	44.2 1.3	46.40 +02	49.9 0.3
18.4	23.06 -06	38.0 1.2	52.25 -06	63.1 1.0	44.09 -06	45.4 1.1	46.39 -08	49.7 -0.1
28.4	22.98 -10	39.0 0.9	52.17 -09	64.1 0.8	44.03 -09	46.4 0.9	46.35 -07	49.7 0.0
Sept. 7.4	22.86 -13	39.8 0.7	52.06 -13	64.8 0.6	43.92 -12	47.2 0.7	46.26 -11	49.8 +0.1
17.3	22.72 -15	40.4 0.5	51.92 -15	65.2 0.4	43.79 -15	47.7 0.4	46.13 -13	50.0 0.2
27.3	22.55 -17	40.7 +0.2	51.76 -17	65.5 +0.1	43.63 -16	48.1 +0.2	45.99 -16	50.3 0.3
Oct. 7.3	22.38 -18	40.8 0.0	51.59 -18	65.5 -0.1	43.46 -17	48.1 0.0	45.82 -17	50.6 0.4
17.3	22.20 -18	40.7 -0.3	51.41 -17	65.3 0.3	43.28 -17	48.0 -0.3	45.65 -17	51.0 0.4
27.2	22.03 -18	40.3 0.6	51.24 -16	64.9 0.5	43.11 -17	47.6 0.5	45.48 -16	51.5 0.4
Nov. 6.2	21.87 -17	39.6 0.8	51.08 -16	64.3 0.7	42.95 -16	47.0 0.7	45.32 -15	51.9 0.5
16.2	21.73 -14	38.7 1.0	50.94 -13	63.4 1.0	42.81 -13	46.2 0.9	45.19 -13	52.4 0.5
26.1	21.63 -12	37.6 1.2	50.84 -09	62.3 1.2	42.70 -10	45.1 1.1	45.08 -09	52.9 0.5
Dec. 6.1	21.55 -09	36.3 1.4	50.76 -06	61.1 1.3	42.62 -06	43.9 1.3	45.00 -06	53.4 0.5
16.1	21.52 -06	34.8 1.5	50.73 -02	59.7 1.4	42.57 -03	42.5 1.4	44.95 -03	53.8 0.5
26.1	21.52 -02	33.2 1.7	50.73 +02	58.2 1.5	42.57 +01	41.0 1.5	44.95 +01	54.3 0.4
36.0	21.56 +02	31.5 -1.7	50.77 +06	56.6 -1.6	42.59 +03	39.5 -1.6	44.98 +03	54.7 +0.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Pavonia.			π Capricorni.			δ Delphini.			α Cygni.		
	Right Ascension.	Declination South.		Right Ascension.	Declination South.		Right Ascension.	Declination North.		Right Ascension.	Declination North.	
	^h 20	^m 15	^s 57	^h 20	^m 19	^s 18	^h 20	^m 26	^s 10	^h 20	^m 36	^s 44
Jan. 2.1	8.21	+02	77.2	43.95	+03	29.2	52.85	-00	28.8	54.39	-08	46.9
12.0	8.26	-09	75.0	43.99	-08	29.2	52.87	+04	27.1	54.33	-08	44.0
22.0	8.30	-15	72.7	44.07	-10	29.2	52.92	-07	25.4	54.33	+02	41.0
Feb. 1.0	8.56	-21	70.3	44.19	-13	29.0	53.01	-10	23.8	54.38	-07	37.9
11.0	8.81	-27	67.9	44.34	-16	28.8	53.12	-14	22.3	54.48	-12	35.0
20.0	9.11	-32	65.7	44.50	-19	28.4	53.28	-17	21.1	54.63	-17	32.2
Mar. 1.9	9.45	-37	63.5	44.72	-22	28.0	53.46	-19	20.0	54.82	-22	29.7
11.9	9.55	-41	61.4	44.95	-24	27.3	53.67	-22	19.3	55.06	-26	27.7
21.9	10.28	-44	59.6	45.20	-26	26.6	53.90	-24	19.0	55.34	-26	26.2
31.8	10.74	-47	58.0	45.48	-28	25.7	54.15	-26	19.0	55.65	-28	25.2
April 10.8	11.22	-49	56.6	45.77	-30	24.7	54.42	-28	19.4	55.99	-30	24.7
20.8	11.72	-51	55.5	46.07	-31	23.6	54.70	-29	20.2	56.34	-36	24.9
30.7	12.23	-51	54.7	46.38	-31	22.4	54.99	-29	21.4	56.70	-36	25.7
May 10.7	12.74	-50	54.3	46.69	-31	21.3	55.29	-29	22.8	57.07	-36	27.0
20.7	13.24	-49	54.2	47.00	-30	20.1	55.58	-28	24.6	57.42	-35	28.8
30.7	13.71	-46	54.4	47.29	-29	19.0	55.85	-27	26.5	57.76	-32	31.0
June 9.6	14.16	-42	55.0	47.57	-27	18.0	56.11	-25	28.5	58.07	-29	33.6
19.6	14.56	-37	55.9	47.83	-24	17.1	56.35	-22	30.6	58.34	-25	36.5
29.6	14.91	-32	57.2	48.05	-21	16.4	56.56	-19	32.8	58.58	-21	39.6
July 9.6	15.19	-25	58.7	48.24	-17	15.8	56.73	-15	34.9	58.76	-16	42.9
19.5	15.49	-18	60.5	48.38	-12	15.4	56.85	-11	36.9	58.88	-10	46.1
29.5	15.54	-10	62.4	48.48	-8	15.2	56.94	-8	38.8	58.96	+04	49.4
Aug. 8.5	15.60	+02	64.5	48.53	+03	15.2	56.98	+02	40.5	58.97	-01	52.5
18.4	15.56	-06	66.5	48.54	-02	15.3	56.98	-03	42.0	58.93	-07	55.5
28.4	15.49	-12	68.6	48.49	-08	15.6	56.93	-07	43.3	58.83	-12	58.2
Sept. 7.4	15.38	-20	70.6	48.41	-10	16.0	56.84	-10	44.4	58.68	-17	60.6
17.4	15.09	-26	72.3	48.30	-13	16.4	56.72	-13	45.2	58.49	-21	62.7
27.3	14.81	-29	73.8	48.15	-16	16.9	56.58	-16	45.7	58.27	-24	64.4
Oct. 7.3	14.50	-32	74.9	47.98	-17	17.4	56.42	-17	46.0	58.02	-26	65.7
17.3	14.17	-33	75.7	47.81	-17	17.9	56.25	-17	46.0	57.75	-27	66.6
27.3	13.84	-32	76.1	47.64	-17	18.4	56.07	-17	45.7	57.48	-27	66.9
Nov. 6.2	13.52	-30	76.0	47.47	-16	18.8	55.91	-16	45.2	57.24	-26	66.7
16.2	13.24	-27	75.5	47.33	-13	19.2	55.76	-14	44.5	56.95	-26	66.0
26.2	12.90	-22	74.6	47.21	-10	19.5	55.63	-12	43.5	56.72	-22	64.9
Dec. 6.1	12.51	-16	73.4	47.13	-07	19.8	55.52	-09	42.2	56.51	-19	63.2
16.1	12.68	-09	71.7	47.07	-03	20.0	55.46	-08	40.8	56.34	-15	61.1
26.1	12.62	-02	69.8	47.06	-00	20.1	55.42	-02	39.3	56.22	-11	58.7
36.1	12.64	+03	67.8	47.08	+04	20.2	55.42	+02	37.6	56.13	-06	55.9

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	μ Aquarii.		ν Cygni.		61 ¹ Cygni.		ζ Cygni.	
	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h 20 ^m 45	[°] 9 ['] 28	^h 20 ^m 52	[°] 40 ['] 39	^h 21 ^m 0	[°] 38 ['] 5	^h 21 ^m 7	[°] 29 ['] 41
Jan. 2.1	30.26 -00	33.9 +0.6	13.73 -06	47.8 -2.6	57.24 -07	76.4 -2.3	17.82 -06	21.2 -2.1
12.1	30.28 +03	34.4 0.5	13.67 -03	45.0 2.8	57.19 -03	73.9 2.6	17.77 -03	18.9 2.3
22.0	30.33 -07	34.9 0.4	13.66 +01	42.2 2.9	57.18 +01	71.3 2.7	17.77 +01	16.5 2.4
Feb. 1.0	30.41 -10	35.3 0.3	13.69 -06	39.3 2.8	57.22 -06	68.6 2.7	17.80 -05	14.1 2.4
11.0	30.53 -13	35.5 +0.2	13.77 -10	36.5 2.7	57.30 -10	66.0 2.6	17.86 -09	11.7 2.3
21.0	30.67 -16	35.6 0.0	13.90 -15	33.9 2.5	57.42 -15	64.5 2.3	17.97 -13	9.5 2.1
Mar. 1.9	30.84 -19	35.5 -0.2	14.07 -19	31.5 2.2	57.59 -19	62.3 2.0	18.11 -16	7.5 1.8
11.9	31.04 -21	35.2 0.4	14.28 -23	29.5 1.7	57.80 -23	59.5 1.6	18.30 -20	5.9 1.4
21.9	31.26 -24	34.7 0.6	14.53 -27	28.0 1.3	58.04 -26	58.1 1.1	18.51 -23	4.7 1.0
31.8	31.51 -26	34.0 0.8	14.81 -30	27.0 0.7	58.32 -29	57.2 0.6	18.76 -26	4.0 -0.5
April 10.8	31.78 -27	33.1 1.0	15.13 -32	26.6 -0.2	58.63 -32	56.9 -0.1	19.03 -28	3.8 0.0
20.8	32.06 -29	32.0 1.2	15.46 -34	26.7 +0.4	58.96 -34	57.1 +0.6	19.33 -30	4.0 +0.5
30.8	32.36 -30	30.7 1.3	15.80 -35	27.4 0.9	59.30 -35	57.8 1.0	19.64 -31	4.8 1.0
May 10.7	32.66 -30	29.3 1.4	16.15 -35	28.6 1.5	59.65 -35	59.1 1.3	19.96 -32	6.0 1.4
20.7	32.96 -30	27.9 1.5	16.50 -34	30.3 1.9	60.00 -34	60.8 2.0	20.28 -32	7.6 1.8
30.7	33.25 -29	26.4 1.5	16.83 -32	32.4 2.3	60.34 -33	63.0 2.3	20.59 -30	9.7 2.2
June 9.7	33.53 -27	24.9 1.4	17.14 -29	34.9 2.6	60.66 -30	65.5 2.7	20.88 -29	12.0 2.6
19.6	33.79 -25	23.5 1.3	17.42 -26	37.7 2.9	60.95 -27	68.3 2.9	21.16 -26	14.6 2.6
29.6	34.02 -21	22.2 1.3	17.66 -22	40.7 3.1	61.20 -24	71.3 3.1	21.40 -23	17.3 2.8
July 9.6	34.22 -18	21.1 1.1	17.85 -17	43.8 3.2	61.42 -19	74.4 3.2	21.60 -18	20.1 2.8
19.5	34.38 -14	20.1 0.9	18.00 -12	47.0 3.2	61.58 -14	77.6 3.2	21.76 -14	22.9 2.8
29.5	34.50 -09	19.3 0.7	18.10 -07	50.2 3.1	61.70 -09	80.8 3.1	21.88 -09	25.7 2.8
Aug. 8.5	34.57 +06	18.7 0.6	18.13 +01	53.2 3.0	61.76 +04	83.9 3.0	21.95 +04	28.4 2.6
18.5	34.59 -00	18.2 0.3	18.12 -04	56.1 2.8	61.77 -02	86.8 2.8	21.97 -00	31.0 2.4
28.4	34.57 -04	18.0 -0.2	18.06 -09	58.8 2.6	61.73 -06	89.5 2.6	21.94 -05	33.3 2.2
Sept. 7.4	34.51 -08	17.9 0.0	17.94 -14	61.2 2.3	61.64 -11	92.0 2.3	21.87 -09	35.4 1.9
17.4	34.42 -11	18.0 +0.2	17.79 -17	63.3 1.9	61.51 -15	94.1 2.0	21.76 -13	37.1 1.6
27.4	34.29 -14	18.2 0.3	17.59 -20	65.0 1.5	61.35 -18	95.9 1.6	21.61 -16	38.6 1.3
Oct. 7.3	34.15 -15	18.5 0.4	17.38 -23	66.3 1.1	61.16 -20	97.3 1.2	21.44 -18	39.7 0.9
17.3	33.99 -16	18.9 0.4	17.14 -24	67.2 0.7	60.95 -21	98.3 0.8	21.25 -19	40.4 0.5
27.3	33.82 -16	19.4 0.5	16.90 -25	67.6 +0.2	60.73 -22	98.9 +0.3	21.06 -20	40.7 +0.1
Nov. 6.2	33.67 -15	19.9 0.6	16.65 -24	67.6 -0.3	60.51 -22	99.0 -0.1	20.86 -19	40.6 -0.3
16.2	33.53 -13	20.5 0.6	16.42 -22	67.1 0.8	60.30 -20	98.6 0.6	20.67 -18	40.2 0.7
26.2	33.40 -11	21.1 0.6	16.20 -20	66.1 1.2	60.10 -19	97.8 1.1	20.49 -17	39.3 1.1
Dec. 6.2	33.30 -08	21.7 0.6	16.01 -18	64.6 1.7	59.93 -16	96.5 1.5	20.34 -14	38.0 1.5
16.1	33.24 -06	22.3 0.6	15.85 -14	62.7 2.1	59.78 -13	94.8 1.9	20.21 -11	36.4 1.8
26.1	33.20 -02	22.9 0.6	15.73 -10	60.4 2.4	59.67 -09	92.7 2.2	20.11 -08	34.5 2.0
36.1	33.20 +02	23.5 +0.6	15.65 -06	57.9 -2.7	59.60 -06	90.4 -2.4	20.05 -05	32.3 -2.2

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Cephei.		γ Pegasi.		β Aquarii.		ξ Aquarii.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination South.
	^h 21 ^m 15	[°] 62 ['] 1	^h 21 ^m 15	[°] 19 ['] 14	^h 21 ^m 24	[°] 6 ['] 8	^h 21 ^m 30	[°] 8 ['] 26
Jan. 2.1	24.06 -24	50.3 -2.6	57.71 -0.05	36.2 -1.8	35.04 -0.03	60.4 +0.7	41.90 -0.04	40.9 +0.6
12.1	23.85 -17	47.5 2.9	57.68 -0.02	34.3 1.9	35.02 -0.00	61.1 0.6	41.88 -0.01	41.4 0.5
22.1	23.71 -10	44.5 3.2	57.67 +0.02	32.4 1.9	35.03 +0.03	61.7 0.5	41.89 +0.02	41.9 0.4
Feb. 1.0	23.65 -02	41.2 3.3	57.71 -0.00	30.5 1.9	35.08 -0.00	62.1 0.4	41.92 -0.05	42.2 0.3
11.0	23.67 +06	37.9 3.3	57.77 -0.08	28.6 1.8	35.15 -0.09	62.5 0.3	41.99 -0.08	42.4 +0.2
21.0	23.77 -14	34.7 3.1	57.87 -0.12	26.9 1.6	35.25 -0.12	62.7 +0.1	42.09 -0.11	42.5 0.0
Mar. 1.9	23.95 -22	31.7 2.9	58.01 -0.15	25.5 1.3	35.38 -0.15	62.7 -0.1	42.21 -0.14	42.4 -0.3
11.9	24.22 -30	29.0 2.6	58.17 -0.18	24.4 0.9	35.54 -0.18	62.5 0.3	42.37 -0.17	42.0 0.5
21.9	24.55 -36	26.7 2.0	58.37 -0.21	23.6 0.6	35.73 -0.21	62.1 0.6	42.56 -0.20	41.4 0.7
31.9	24.94 -42	24.9 1.5	58.60 -0.24	23.2 -0.2	35.95 -0.23	61.4 0.8	42.77 -0.23	40.6 0.9
April 10.8	25.38 -46	23.8 0.9	58.85 -0.27	23.3 +0.3	36.20 -0.26	60.4 1.0	43.02 -0.25	39.6 1.1
20.8	25.87 -49	23.2 -0.3	59.13 -0.28	23.8 0.7	36.46 -0.28	59.3 1.3	43.28 -0.27	38.4 1.3
30.8	26.37 -51	23.2 +0.4	59.42 -0.30	24.7 1.1	36.75 -0.29	57.9 1.4	43.56 -0.29	37.0 1.5
May 10.8	26.89 -51	23.9 1.0	59.72 -0.30	26.0 1.5	37.04 -0.30	56.4 1.6	43.86 -0.30	35.4 1.6
20.7	27.39 -50	25.2 1.5	60.03 -0.30	27.6 1.8	37.34 -0.30	54.8 1.6	44.17 -0.30	33.8 1.6
30.7	27.88 -47	27.0 2.0	60.33 -0.30	29.6 2.1	37.65 -0.30	53.2 1.7	44.47 -0.30	32.2 1.7
June 9.7	28.34 -43	29.2 2.5	60.62 -0.28	31.8 2.3	37.94 -0.29	51.5 1.7	44.77 -0.29	30.5 1.6
19.6	28.74 -38	31.9 2.9	60.89 -0.26	34.1 2.4	38.22 -0.27	49.8 1.6	45.05 -0.27	28.9 1.6
29.6	29.09 -32	34.9 3.2	61.13 -0.23	36.5 2.5	38.47 -0.24	48.2 1.5	45.31 -0.25	27.4 1.4
July 9.6	29.38 -25	38.3 3.4	61.34 -0.19	39.0 2.5	38.70 -0.21	46.8 1.4	45.54 -0.21	26.0 1.3
19.6	29.59 -17	41.7 3.5	61.51 -0.15	41.5 2.4	38.89 -0.17	45.5 1.3	45.74 -0.18	24.9 1.1
29.5	29.72 -09	45.3 3.6	61.64 -0.11	43.9 2.3	39.04 -0.13	44.4 1.0	45.89 -0.14	23.9 0.9
Aug. 8.5	29.76 +01	48.8 3.5	61.72 -0.06	46.1 2.2	39.14 -0.08	43.5 0.8	46.01 -0.09	23.1 0.7
18.5	29.73 -07	52.3 3.4	61.76 +0.02	48.2 2.0	39.20 +0.04	42.8 0.6	46.07 +0.05	22.5 0.6
28.5	29.62 -15	55.7 3.2	61.76 -0.03	50.1 1.8	39.22 -0.00	42.3 0.4	46.10 -0.00	22.2 0.5
Sept. 7.4	29.44 -22	58.8 3.0	61.71 -0.07	51.7 1.5	39.19 -0.04	42.0 -0.2	46.08 -0.04	22.0 -0.1
17.4	29.19 -28	61.7 2.7	61.62 -0.10	53.1 1.2	39.13 -0.08	41.9 0.0	46.02 -0.07	22.0 +0.1
27.4	28.88 -33	64.2 2.3	61.50 -0.13	54.1 0.9	39.03 -0.11	42.0 +0.2	45.93 -0.10	22.2 0.3
Oct. 7.3	28.52 -38	66.3 1.9	61.36 -0.15	54.9 0.6	38.91 -0.13	42.3 0.3	45.84 -0.13	22.6 0.4
17.3	28.13 -41	68.0 1.4	61.20 -0.16	55.3 +0.3	38.77 -0.15	42.6 0.4	45.68 -0.14	23.0 0.5
27.3	27.71 -43	69.1 0.9	61.03 -0.17	55.5 0.0	38.62 -0.16	43.1 0.5	45.53 -0.15	23.5 0.5
Nov. 6.3	27.27 -43	69.8 +0.3	60.86 -0.17	55.3 -0.3	38.47 -0.15	43.6 0.6	45.38 -0.15	24.1 0.6
16.2	26.84 -43	69.8 -0.2	60.69 -0.16	54.8 0.7	38.33 -0.14	44.2 0.6	45.23 -0.14	24.7 0.6
26.2	26.42 -41	69.3 0.8	60.54 -0.14	54.0 1.0	38.20 -0.12	44.9 0.7	45.10 -0.12	25.3 0.6
Dec. 6.2	26.03 -38	68.2 1.4	60.41 -0.13	52.9 1.3	38.08 -0.10	45.5 0.7	44.99 -0.10	26.0 0.6
16.2	25.67 -34	66.5 1.9	60.30 -0.10	51.5 1.5	37.99 -0.08	46.3 0.7	44.89 -0.08	26.6 0.6
26.1	25.36 -38	64.4 2.4	60.22 -0.07	49.9 1.7	37.93 -0.05	47.0 0.7	44.83 -0.05	27.2 0.6
36.1	25.11 -21	61.8 -2.8	60.17 -0.04	48.1 -1.8	37.89 -0.02	47.7 +0.7	44.79 -0.02	27.8 +0.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Pegasi.		μ Capricorni.		α Aquarii.		α Gruis.	
	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination South.	Right Ascension.	Declination South.
	^h ^m 21 37	[°] 16'	^h ^m 21 46	[°] 14' 9"	^h ^m 21 58	[°] 0' 57"	^h ^m 21 59	[°] 47' 35"
Jan. 2.1	40.93 -06	20.0 -1.3	4.37 -06	80.3 +0.3	58.93 -06	34.8 +0.9	51.78 -11	64.3 -1.3
12.1	40.88 -08	18.7 1.4	4.34 -02	80.6 0.2	58.89 -04	35.7 0.8	51.69 -07	62.9 1.6
22.1	40.87 -00	17.3 1.4	4.33 +01	80.7 +0.1	58.86 -01	36.5 0.8	51.64 -02	61.2 1.6
Feb. 1.0	40.89 +03	16.0 1.3	4.35 -04	80.7 -0.1	58.87 +02	37.2 0.7	51.64 +02	59.3 2.1
11.0	40.94 -07	14.7 1.2	4.41 -07	80.5 0.3	58.90 -08	37.8 0.6	51.69 -07	57.1 2.2
21.0	41.02 -10	13.6 1.0	4.49 -10	80.2 0.4	58.97 -08	38.3 0.4	51.78 -11	54.8 2.4
Mar. 2.0	41.14 -13	12.7 0.8	4.61 -13	79.6 0.6	59.06 -11	38.5 +0.1	51.99 -16	52.3 2.5
11.9	41.28 -16	12.1 0.6	4.76 -16	78.9 0.8	59.19 -14	38.5 -0.1	52.10 -20	49.8 2.5
21.9	41.46 -19	11.8 -0.2	4.94 -19	78.0 1.0	59.35 -17	38.3 0.4	52.33 -24	47.3 2.5
31.9	41.66 -22	11.8 +0.2	5.14 -22	76.9 1.2	59.54 -20	37.8 0.6	52.60 -29	44.9 2.4
April 10.9	41.90 -25	12.1 0.6	5.38 -25	75.6 1.4	59.76 -23	37.0 0.9	52.90 -32	42.5 2.3
20.8	42.16 -27	12.2 0.9	5.64 -27	74.2 1.6	60.00 -26	36.0 1.2	53.25 -36	40.2 2.2
30.8	42.44 -29	13.9 1.2	5.92 -29	72.6 1.8	60.27 -28	34.7 1.4	53.69 -39	38.2 2.6
May 10.8	42.73 -30	15.3 1.5	6.22 -30	71.0 1.6	60.56 -29	33.2 1.6	54.01 -41	36.3 1.7
20.7	43.03 -30	16.9 1.7	6.53 -31	69.4 1.7	60.86 -30	31.5 1.7	54.43 -42	34.7 1.4
30.7	43.33 -30	18.7 1.9	6.85 -31	67.7 1.6	61.16 -30	29.7 1.8	54.85 -43	33.5 1.1
June 9.7	43.62 -28	20.8 2.0	7.15 -30	66.1 1.8	61.46 -29	27.9 1.9	55.47 -41	32.6 0.7
19.7	43.90 -27	22.8 2.1	7.45 -29	64.6 1.4	61.75 -28	26.0 1.8	55.67 -39	32.1 -0.3
29.6	44.16 -24	25.0 2.1	7.73 -26	63.3 1.2	62.02 -26	24.2 1.6	56.05 -36	32.0 +0.1
July 9.6	44.38 -21	27.1 2.1	7.97 -23	62.1 1.1	62.26 -23	22.4 1.7	56.40 -32	32.2 0.4
19.6	44.57 -17	29.2 2.0	8.19 -20	61.2 0.8	62.47 -19	20.8 1.6	56.71 -28	32.9 0.8
29.6	44.73 -13	31.1 1.9	8.36 -16	60.4 0.6	62.65 -16	19.3 1.4	56.96 -22	33.9 1.2
Aug. 8.5	44.84 -09	32.9 1.7	8.49 -11	59.9 0.4	62.78 -11	18.0 1.2	57.16 -17	35.2 1.5
18.5	44.90 +04	34.5 1.5	8.58 -06	59.7 -0.2	62.87 -06	17.0 1.0	57.29 -10	36.8 1.7
28.5	44.92 -00	35.9 1.3	8.62 +02	59.6 +0.1	62.92 +03	16.1 0.7	57.36 +04	38.6 1.0
Sept. 7.4	44.90 -04	37.0 1.0	8.62 -02	59.8 0.2	62.93 -02	15.5 0.8	57.36 -08	40.5 2.6
17.4	44.84 -08	38.0 0.8	8.58 -06	60.1 0.4	62.89 -06	15.1 0.8	57.31 -06	42.5 2.0
27.4	44.75 -10	38.6 0.6	8.50 -09	60.6 0.8	62.82 -08	14.9 -0.1	57.20 -13	44.5 1.9
Oct. 7.4	44.64 -13	39.1 0.8	8.39 -12	61.2 0.6	62.78 -11	14.9 +0.1	57.04 -19	46.4 1.8
17.3	44.50 -14	39.3 +0.1	8.26 -14	61.8 0.7	62.61 -13	15.1 0.2	56.85 -21	48.1 1.6
27.3	44.35 -15	39.2 -0.2	8.11 -15	62.5 0.7	62.47 -14	15.4 0.4	56.63 -22	49.5 1.3
Nov. 6.3	44.20 -15	38.9 0.4	7.97 -15	63.2 0.7	62.33 -14	15.9 0.8	56.40 -24	50.6 0.9
16.3	44.05 -14	38.5 0.6	7.82 -14	63.9 0.6	62.19 -14	16.4 0.6	56.16 -23	51.3 0.6
26.2	43.91 -13	37.7 0.8	7.68 -13	64.5 0.6	62.06 -13	17.1 0.7	55.93 -22	51.7 +0.2
Dec. 6.2	43.79 -11	36.8 1.0	7.56 -11	65.1 0.5	61.94 -11	17.8 0.8	55.73 -20	51.7 -0.2
16.2	43.68 -09	35.8 1.1	7.46 -09	65.6 0.4	61.83 -09	18.7 0.8	55.54 -17	51.2 0.7
26.1	43.60 -07	34.6 1.3	7.39 -06	66.0 0.4	61.75 -07	19.5 0.9	55.40 -15	50.4 1.0
36.1	43.55 -04	33.3 -1.3	7.34 -04	66.3 +0.2	61.69 -05	20.4 +0.9	55.28 -09	49.2 -1.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	♈ Aquarii.		♉ Aquarii.		♊ Aquarii.		♋ Pegasi.	
	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.
	^h ^m 22 9	[°] ['] 8 26	^h ^m 22 18	[°] ['] 0 42	^h ^m 22 28	[°] ['] 0 47	^h ^m 22 34	[°] ['] 10 8
Jan. 2.2	50.70 -07	23.9 +0.8	30.96 -07	30.5 -0.9	33.23 -08	49.6 +0.8	51.72 -09	37.9 -1.1
12.1	50.64 -04	24.4 0.4	30.90 -08	29.6 0.9	33.16 -08	50.4 0.8	51.64 -07	36.8 1.2
22.1	50.61 -01	24.8 0.3	30.86 -08	28.7 0.8	33.12 -04	51.2 0.7	51.58 -08	35.5 1.2
Feb. 1.1	50.61 +01	25.0 0.3	30.84 -00	27.9 0.7	33.09 -01	51.9 0.6	51.54 -09	34.3 1.2
11.0	50.64 -04	25.2 +0.1	30.86 +08	27.3 0.6	33.10 +02	52.5 0.6	51.54 +01	33.1 1.1
21.0	50.70 -07	25.2 -0.1	30.90 -08	26.7 0.4	33.13 -08	52.9 0.3	51.56 -04	32.1 1.0
Mar. 2.0	50.78 -10	24.9 0.3	30.98 -09	26.4 -0.2	33.20 -08	53.1 +0.1	51.61 -07	31.2 0.8
12.0	50.90 -14	24.5 0.3	31.08 -13	26.3 0.0	33.30 -11	53.1 -0.1	51.70 -11	30.6 0.6
21.9	51.06 -17	23.9 0.0	31.22 -16	26.5 +0.3	33.43 -13	52.9 0.4	51.83 -14	30.2 -0.2
31.9	51.24 -20	23.0 1.0	31.40 -19	26.9 0.6	33.59 -18	52.3 0.6	51.99 -18	30.1 +0.1
April 10.9	51.45 -23	21.9 1.2	31.60 -23	27.6 0.9	33.79 -21	51.6 0.9	52.18 -21	30.4 0.4
20.9	51.70 -26	20.6 1.4	31.84 -23	28.6 1.1	34.02 -24	50.5 1.2	52.41 -24	31.0 0.8
30.8	51.96 -28	19.1 1.6	32.10 -27	29.8 1.4	34.27 -27	49.2 1.4	52.66 -27	31.9 1.1
May 10.8	52.25 -29	17.4 1.7	32.38 -29	31.3 1.6	34.55 -29	47.7 1.6	52.94 -29	33.1 1.4
20.8	52.55 -29	15.7 1.6	32.67 -30	33.0 1.7	34.84 -30	46.0 1.8	53.23 -30	34.7 1.6
30.7	52.86 -31	13.9 1.8	32.98 -30	34.8 1.9	35.15 -31	44.2 1.9	53.54 -31	36.4 1.8
June 9.7	53.16 -31	12.1 1.8	33.28 -30	36.7 1.9	35.45 -30	42.3 1.9	53.84 -30	38.3 2.0
19.7	53.46 -29	10.4 1.7	33.58 -28	38.7 1.9	35.75 -29	40.4 1.9	54.14 -29	40.4 2.1
29.7	53.74 -27	8.8 1.6	33.86 -27	40.6 1.9	36.03 -27	38.5 1.9	54.42 -28	42.6 2.2
July 9.6	54.00 -24	7.3 1.4	34.11 -24	42.4 1.8	36.30 -28	36.7 1.8	54.69 -28	44.7 2.1
19.6	54.22 -21	6.0 1.3	34.33 -21	44.2 1.7	36.53 -28	35.0 1.6	54.93 -28	46.8 2.1
29.6	54.41 -17	4.8 1.0	34.52 -17	45.7 1.5	36.73 -18	33.4 1.4	55.13 -18	48.8 2.0
Aug. 8.6	54.56 -13	4.0 0.8	34.67 -13	47.1 1.3	36.89 -14	32.1 1.2	55.29 -14	50.7 1.8
18.5	54.67 -08	3.3 0.8	34.78 -09	48.3 1.1	37.01 -16	31.0 1.0	55.41 -16	52.5 1.6
28.5	54.73 +04	2.9 0.3	34.86 +04	49.3 0.9	37.09 -06	30.1 0.8	55.49 -06	54.0 1.4
Sept. 7.5	54.75 -00	2.7 -0.1	34.87 -00	50.0 0.6	37.12 +01	29.4 0.6	55.53 +02	55.3 1.2
17.4	54.73 -04	2.7 +0.1	34.86 -08	50.6 0.4	37.11 -08	28.9 0.3	55.52 -09	56.4 1.0
27.4	54.67 -07	2.9 0.3	34.81 -07	50.9 +0.3	37.07 -08	28.7 -0.1	55.48 -08	57.3 0.7
Oct. 7.4	54.58 -10	3.3 0.4	34.72 -09	51.0 0.0	37.00 -08	28.7 +0.1	55.41 -08	57.9 0.6
17.4	54.47 -12	3.8 0.4	34.62 -11	50.9 -0.2	36.90 -11	28.9 0.3	55.32 -11	58.2 +0.3
27.3	54.34 -13	4.3 0.6	34.50 -13	50.6 0.3	36.79 -13	29.2 0.4	55.20 -12	58.4 0.0
Nov. 6.3	54.20 -14	5.0 0.7	34.36 -13	50.2 0.5	36.66 -13	29.7 0.6	55.07 -13	58.3 -0.2
16.3	54.06 -14	5.6 0.7	34.23 -13	49.7 0.6	36.53 -13	30.2 0.6	54.94 -13	58.0 0.4
26.3	53.93 -13	6.3 0.7	34.10 -13	49.0 0.7	36.40 -13	30.9 0.7	54.80 -13	57.4 0.6
Dec. 6.2	53.81 -12	7.0 0.7	33.97 -12	48.3 0.8	36.27 -12	31.6 0.8	54.67 -12	56.7 0.8
16.2	53.70 -10	7.7 0.6	33.86 -10	47.5 0.8	36.16 -11	32.4 0.8	54.55 -11	55.9 1.0
26.2	53.61 -08	8.3 0.6	33.77 -09	46.6 0.9	36.06 -09	33.2 0.8	54.45 -10	54.8 1.1
36.1	53.55 -06	8.8 +0.3	33.69 -06	45.7 -0.9	35.98 -07	34.0 +0.8	54.36 -06	53.7 -1.2

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date	λ Aquarii.		α Piscis Australis. (Fomalhaut.)		α Pegasi. (Markab.)	
	Right Ascension.	Declination South.	Right Ascension.	Declination South.	Right Ascension.	Declination North.
	^h ^m 22 45	[°] ['] 8 16	^h ^m 22 50	[°] ['] 30 18	^h ^m 22 58	[°] ['] 14 29
Jan. 2.2	42.41 -09	56.2 +0.6	19.60 -11	85.8 -0.2	10.39 -10	48.6 -1.1
12.1	42.33 -07	56.8 0.5	19.50 -09	85.4 0.5	10.30 -09	47.4 1.3
22.1	42.27 -05	57.2 0.3	19.43 -06	84.8 0.8	10.22 -07	46.1 1.3
Feb. 1.1	42.24 -02	57.4 +0.3	19.38 -03	83.9 1.0	10.16 -05	44.7 1.3
11.1	42.23 -00	57.5 0.0	19.37 -00	82.7 1.3	10.13 -02	43.4 1.3
21.0	42.25 +03	57.5 -0.2	19.39 +04	81.3 1.5	10.12 +01	42.1 1.3
Mar. 2.0	42.30 -07	57.2 0.4	19.44 -07	79.7 1.7	10.15 -05	41.0 1.0
12.0	42.38 -10	56.7 0.6	19.53 -11	77.9 1.9	10.22 -08	40.3 0.8
22.0	42.50 -13	56.0 0.8	19.65 -14	76.0 2.0	10.32 -12	39.5 0.8
31.9	42.65 -17	55.1 1.1	19.82 -18	73.9 2.1	10.46 -16	39.2 -0.2
April 10.9	42.83 -20	53.9 1.3	20.02 -22	71.7 2.3	10.63 -19	39.2 +0.2
20.9	43.05 -23	52.5 1.5	20.26 -25	69.5 2.2	10.84 -23	39.6 0.5
30.8	43.30 -26	51.0 1.6	20.53 -29	67.3 2.3	11.09 -26	40.3 0.9
May 10.8	43.57 -28	49.3 1.8	20.83 -31	65.2 2.1	11.36 -28	41.3 1.2
20.8	43.86 -30	47.5 1.8	21.15 -33	63.1 2.0	11.65 -30	42.7 1.5
30.8	44.17 -31	45.6 1.9	21.49 -34	61.2 1.8	11.96 -31	44.3 1.8
June 9.7	44.47 -31	43.7 1.9	21.83 -34	59.5 1.6	12.27 -31	46.2 2.0
19.7	44.78 -30	41.9 1.8	22.17 -34	58.0 1.3	12.57 -30	48.2 2.1
29.7	45.08 -28	40.1 1.7	22.51 -32	56.8 1.0	12.87 -29	50.4 2.2
July 9.7	45.35 -26	38.5 1.5	22.82 -30	56.0 0.7	13.15 -26	52.6 2.3
19.6	45.60 -23	37.0 1.3	23.11 -27	55.5 -0.3	13.40 -24	54.9 2.2
29.6	45.82 -20	35.8 1.1	23.36 -23	55.3 0.0	13.62 -20	57.1 2.3
Aug. 8.6	46.00 -16	34.8 0.9	23.57 -19	55.5 +0.3	13.80 -16	59.2 2.0
18.5	46.14 -12	34.1 0.6	23.73 -14	56.0 0.7	13.95 -12	61.2 1.9
28.5	46.23 -07	33.6 0.4	23.85 -09	56.8 0.9	14.05 -08	62.9 1.7
Sept. 7.5	46.28 +03	33.4 -0.1	23.92 +04	57.9 1.1	14.11 +04	64.5 1.5
17.5	46.30 -00	33.4 +0.1	23.93 -00	59.1 1.3	14.13 -00	65.9 1.2
27.4	46.27 -04	33.6 0.3	23.91 -06	60.5 1.4	14.11 -04	67.0 1.0
Oct. 7.4	46.21 -07	34.0 0.4	23.84 -08	62.0 1.5	14.06 -07	67.9 0.8
17.4	46.13 -10	34.5 0.6	23.74 -11	63.4 1.5	13.98 -09	68.5 0.5
27.4	46.02 -11	35.1 0.6	23.62 -14	64.9 1.4	13.88 -11	68.9 +0.3
Nov. 6.3	45.90 -12	35.8 0.7	23.47 -16	66.2 1.2	13.76 -12	69.1 0.0
16.3	45.77 -13	36.5 0.7	23.32 -16	67.3 1.0	13.63 -13	68.9 -0.2
26.3	45.64 -13	37.2 0.7	23.16 -16	68.2 0.8	13.50 -13	68.6 0.5
Dec. 6.2	45.52 -12	38.0 0.7	23.01 -15	68.8 0.6	13.37 -12	68.0 0.7
16.2	45.40 -11	38.6 0.7	22.86 -14	69.2 +0.2	13.24 -12	67.2 0.9
26.2	45.30 -10	39.3 0.6	22.74 -12	69.3 -0.1	13.12 -11	66.2 1.1
36.2	45.21 -08	39.8 +0.6	22.63 -10	69.1 -0.3	13.02 -10	65.1 -1.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	♋ Piscium.		♌ Piscium.		♍ Piscium.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h 23 ^m 21	[°] 5 ['] 39	^h 23 ^m 33	[°] 4 ['] 54	^h 23 ^m 52	[°] 6 ['] 7
Jan. 2.2	15.56 ^s -11	14.0 ^s -0.9	9.02 ^s -11	38.3 ^s -0.9	31.46 ^s -12	55.2 ^s -0.8
12.2	15.46 ^s -0.9	13.1 ^s 0.9	8.92 ^s -10	37.4 ^s 0.9	31.34 ^s -11	54.3 ^s 0.9
22.1	15.37 ^s -0.8	12.1 ^s 0.9	8.82 ^s -0.8	36.5 ^s 0.9	31.24 ^s -10	53.4 ^s 0.8
Feb. 1.1	15.31 ^s -0.6	11.2 ^s 0.9	8.75 ^s -0.7	35.7 ^s 0.8	31.15 ^s -0.8	52.6 ^s 0.8
11.1	15.26 ^s -0.8	10.4 ^s 0.8	8.69 ^s -0.4	34.9 ^s 0.7	31.08 ^s -0.6	51.8 ^s 0.7
21.1	15.24 ^s -0.1	9.7 ^s 0.6	8.66 ^s -0.2	34.3 ^s 0.6	31.03 ^s -0.8	51.1 ^s 0.6
Mar. 2.0	15.25 ^s +0.8	9.1 ^s 0.5	8.66 ^s +0.2	33.8 ^s 0.4	31.01 ^s -0.1	50.6 ^s 0.4
12.0	15.29 ^s -0.6	8.8 ^s -0.2	8.69 ^s -0.6	33.5 ^s -0.2	31.02 ^s +0.8	50.3 ^s -0.2
22.0	15.37 ^s -1.0	8.7 ^s 0.0	8.76 ^s -0.8	33.4 ^s +0.1	31.06 ^s -0.7	50.1 ^s 0.0
April 1.0	15.48 ^s -1.8	8.8 ^s +0.8	8.86 ^s -1.2	33.6 ^s 0.8	31.15 ^s -1.1	50.2 ^s +0.8
10.9	15.64 ^s -1.7	9.3 ^s 0.6	9.01 ^s -1.6	34.1 ^s 0.6	31.28 ^s -1.4	50.6 ^s 0.6
20.9	15.92 ^s -2.1	10.0 ^s 0.9	9.18 ^s -2.0	34.8 ^s 0.9	31.44 ^s -1.8	51.3 ^s 0.6
30.9	16.05 ^s -2.4	11.1 ^s 1.2	9.40 ^s -2.2	35.8 ^s 1.2	31.64 ^s -2.2	52.3 ^s 1.1
May 10.8	16.30 ^s -2.7	12.4 ^s 1.4	9.65 ^s -2.6	37.1 ^s 1.4	31.87 ^s -2.6	53.5 ^s 1.4
20.8	16.58 ^s -2.9	13.9 ^s 1.6	9.92 ^s -2.8	38.7 ^s 1.6	32.14 ^s -2.7	55.0 ^s 1.6
30.8	16.87 ^s -3.0	15.6 ^s 1.8	10.21 ^s -3.0	40.4 ^s 1.8	32.42 ^s -2.9	56.7 ^s 1.8
June 9.8	17.18 ^s -3.1	17.5 ^s 1.9	10.52 ^s -3.1	42.3 ^s 1.9	32.72 ^s -3.0	58.5 ^s 1.9
19.7	17.48 ^s -3.0	19.5 ^s 2.0	10.82 ^s -3.1	44.3 ^s 2.0	33.03 ^s -3.1	60.5 ^s 2.0
29.7	17.78 ^s -2.9	21.6 ^s 2.0	11.13 ^s -3.0	46.3 ^s 2.0	33.34 ^s -3.0	62.5 ^s 2.0
July 9.7	18.07 ^s -2.8	23.6 ^s 2.0	11.42 ^s -2.8	48.3 ^s 2.0	33.63 ^s -2.9	64.5 ^s 2.0
19.7	18.33 ^s -2.6	25.6 ^s 1.9	11.69 ^s -2.6	50.2 ^s 1.9	33.91 ^s -2.7	66.5 ^s 1.9
29.6	18.57 ^s -2.2	27.5 ^s 1.8	11.93 ^s -2.2	52.1 ^s 1.8	34.17 ^s -2.4	68.4 ^s 1.8
Aug. 8.6	18.77 ^s -1.8	29.1 ^s 1.7	12.14 ^s -1.9	53.7 ^s 1.6	34.40 ^s -2.1	70.1 ^s 1.7
18.6	18.93 ^s -1.5	30.7 ^s 1.4	12.32 ^s -1.6	55.2 ^s 1.4	34.59 ^s -1.7	71.7 ^s 1.6
28.5	19.06 ^s -1.0	32.0 ^s 1.2	12.46 ^s -1.2	56.5 ^s 1.2	34.74 ^s -1.3	73.0 ^s 1.3
Sept. 7.5	19.14 ^s -0.7	33.1 ^s 1.0	12.56 ^s -0.8	57.6 ^s 0.9	34.86 ^s -1.0	74.2 ^s 1.0
17.5	19.19 ^s +0.8	34.0 ^s 0.8	12.62 ^s +0.4	58.4 ^s 0.7	34.93 ^s -0.6	75.1 ^s 0.8
27.5	19.20 ^s -0.1	34.6 ^s 0.6	12.64 ^s -0.0	59.0 ^s 0.6	34.97 ^s +0.2	75.8 ^s 0.6
Oct. 7.4	19.17 ^s -0.6	35.0 ^s 0.8	12.62 ^s -0.8	59.3 ^s +0.8	34.98 ^s -0.1	76.2 ^s 0.8
17.4	19.11 ^s -0.7	35.2 ^s +0.1	12.58 ^s -0.6	59.5 ^s 0.0	34.95 ^s -0.4	76.5 ^s +0.1
27.4	19.04 ^s -0.9	35.2 ^s -0.1	12.51 ^s -0.8	59.4 ^s -0.1	34.90 ^s -0.6	76.5 ^s -0.1
Nov. 6.4	18.94 ^s -1.1	35.0 ^s 0.8	12.43 ^s -0.9	59.2 ^s 0.3	34.83 ^s -0.8	76.3 ^s 0.2
16.3	18.83 ^s -1.1	34.7 ^s 0.4	12.32 ^s -1.1	58.8 ^s 0.4	34.74 ^s -1.0	76.0 ^s 0.4
26.3	18.71 ^s -1.2	34.2 ^s 0.6	12.21 ^s -1.1	58.3 ^s 0.6	34.64 ^s -1.1	75.6 ^s 0.6
Dec. 6.3	18.59 ^s -1.2	33.5 ^s 0.7	12.09 ^s -1.2	57.7 ^s 0.7	34.53 ^s -1.1	75.0 ^s 0.6
16.2	18.47 ^s -1.2	32.8 ^s 0.8	11.98 ^s -1.2	56.9 ^s 0.8	34.41 ^s -1.2	74.3 ^s 0.7
26.2	18.36 ^s -1.1	32.0 ^s 0.9	11.86 ^s -1.1	56.1 ^s 0.8	34.29 ^s -1.2	73.5 ^s 0.8
36.2	18.25 ^s -1.0	31.1 ^s -0.9	11.75 ^s -1.0	55.3 ^s -0.9	34.17 ^s -1.1	72.7 ^s -0.8

328 SOLAR EPHEMERIS, 1868.

AT WASHINGTON MEAN AND APPARENT NOON.

Date.	APPARENT RIGHT ASCENSION.		APPARENT DECLINATION.		HOURLY MOTION.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sideral Time of Semid. passing Merid.	Sideral Time of Mean Noon.
	Mean Noon.	Ap- parent Noon.	Mean Noon.	Ap- parent Noon.	Right Ascen- sion.	Declina- tion.				
Jan. 1	^h 18 ^m 46 ^s 16.27	^s 16.95	[°] 23 ['] 1' 39.7	39.0	11.042	12.19	^m + 3 ^s 42.75	16' 18.39	^m 11.10	^h 18 ^m 42 ^s 33.57
2	18 50 41.11	41.88	22 56 33.1	32.2	11.027	13.34	4 11.05	18.30	11.05	18 46 30.12
3	18 55 5.57	6.43	22 50 59.2	58.1	11.011	14.48	4 38.97	18.40	11.00	18 50 26.68
4	18 59 29.63	30.57	22 44 58.0	56.8	10.994	15.62	5 6.47	18.40	10.95	18 54 23.24
5	19 3 53.26	54.28	22 38 20.7	28.3	10.976	16.73	5 33.54	18.38	10.89	18 58 19.80
6	19 8 16.44	17.54	22 31 34.5	32.8	10.957	17.84	6 0.16	18.36	10.83	19 2 16.35
7	19 12 39.13	40.31	22 24 12.7	10.7	10.936	18.96	6 26.31	18.33	10.76	19 6 12.91
8	19 17 1.33	2.58	22 16 24.4	22.2	10.914	20.05	6 51.96	18.30	10.69	19 10 9.47
9	19 21 23.00	24.33	22 8 9.9	7.4	10.892	21.14	7 17.10	18.27	10.62	19 14 6.02
10	19 25 44.12	45.52	21 59 29.3	26.5	10.869	22.22	7 41.67	18.23	10.55	19 18 2.58
11	19 30 4.68	6.15	21 50 23.1	20.0	10.845	23.28	8 5.67	18.18	10.47	19 21 59.14
12	19 34 24.66	26.19	21 40 51.4	48.0	10.820	24.34	8 29.10	18.13	10.39	19 25 55.69
13	19 38 44.03	45.62	21 30 54.4	50.7	10.794	25.39	8 51.92	18.06	10.30	19 29 52.25
14	19 43 2.79	4.44	21 20 32.5	28.5	10.768	26.42	9 14.11	17.99	10.21	19 33 48.81
15	19 47 20.90	22.61	21 9 45.9	41.6	10.741	27.44	9 35.67	17.92	10.12	19 37 45.36
16	19 51 38.36	40.13	20 58 35.0	30.3	10.713	28.45	9 56.58	17.85	10.03	19 41 41.92
17	19 55 55.15	56.98	20 46 60.0	55.0	10.685	29.45	10 16.82	17.77	9.93	19 45 38.48
18	20 0 11.25	13.14	20 34 61.3	55.9	10.656	30.43	10 36.35	17.68	9.83	19 49 35.03
19	20 4 26.65	28.58	20 22 39.2	33.5	10.627	31.40	10 55.18	17.59	9.73	19 53 31.59
20	20 8 41.33	43.30	20 9 54.3	48.2	10.596	32.35	11 13.30	17.49	9.63	19 57 28.14
21	20 12 55.27	57.29	19 56 46.5	40.2	10.565	33.29	11 30.69	17.39	9.52	20 1 24.70
22	20 17 8.46	10.53	19 43 16.4	9.7	10.533	34.21	11 47.33	17.29	9.42	20 5 21.25
23	20 21 20.88	22.09	19 29 24.3	17.2	10.501	35.12	12 3.20	17.18	9.31	20 9 17.81
24	20 25 22.52	34.67	19 15 10.6	3.2	10.468	36.01	12 18.28	17.07	9.20	20 13 14.37
25	20 29 43.37	45.56	19 0 35.7	28.0	10.435	36.88	12 32.56	16.95	9.09	20 17 10.92
26	20 33 53.42	55.64	18 45 39.9	31.8	10.401	37.74	12 46.05	16.83	8.98	20 21 7.48
27	20 38 2.65	4.90	18 30 23.7	15.3	10.367	38.59	12 58.72	16.71	8.87	20 25 4.03
28	20 42 11.06	13.32	18 14 47.4	38.8	10.333	39.41	13 10.57	16.59	8.76	20 29 0.59
29	20 46 18.63	20.91	17 58 51.6	42.7	10.298	40.22	13 21.59	16.46	8.64	20 32 57.14
30	20 50 25.37	27.67	17 42 36.5	27.3	10.263	41.02	13 31.77	16.33	8.53	20 36 53.70
31	20 54 31.26	33.59	17 25 62.6	53.2	10.228	41.79	13 41.10	16.19	8.41	20 40 50.25
Feb. 1	20 58 36.31	38.66	17 9 10.2	0.5	10.193	42.55	13 49.59	16.05	8.30	20 44 46.81
2	21 2 40.52	42.88	16 51 59.8	49.8	10.158	43.30	13 57.23	15.91	8.18	20 48 43.36
3	21 6 43.89	46.26	16 34 31.8	21.6	10.123	44.02	14 4.03	15.76	8.07	20 52 39.92
4	21 10 46.42	48.80	16 16 46.5	36.0	10.088	44.74	14 10.00	15.60	7.95	20 56 36.47
5	21 14 48.12	50.51	15 58 44.3	33.5	10.053	45.43	14 15.14	15.44	7.84	21 0 33.03
6	21 18 49.00	51.39	15 40 25.7	14.7	10.019	46.10	14 19.46	15.27	7.72	21 4 29.58
7	21 22 49.06	54.45	15 21 51.2	40.0	9.985	46.76	14 22.96	15.10	7.61	21 8 26.13
8	21 26 48.32	50.71	15 2 61.1	49.7	9.952	47.40	14 25.66	14.93	7.49	21 12 22.69
9	21 30 46.79	49.18	14 43 55.7	44.1	9.919	48.03	14 27.55	14.75	7.38	21 16 19.24
10	21 34 44.46	46.85	14 24 35.5	23.8	9.887	48.63	14 28.67	14.57	7.27	21 20 15.80
11	21 38 41.37	43.72	14 4 61.0	49.1	9.855	49.22	14 29.02	14.38	7.16	21 24 12.35
12	21 42 37.52	39.89	13 45 12.5	0.5	9.824	49.80	14 28.61	14.19	7.05	21 28 8.90
13	21 46 32.92	35.28	13 24 70.4	58.3	9.793	50.36	14 27.45	13.99	6.94	21 32 5.46
14	21 50 27.59	29.94	13 4 55.1	42.9	9.763	50.90	14 25.56	13.79	6.83	21 36 2.01
15	21 54 21.54	23.88	12 44 27.0	14.7	9.733	51.43	14 22.95	13.58	6.72	21 39 58.56
16	21 58 14.78	17.10	12 23 46.5	34.1	9.704	51.93	14 19.63	13.37	6.62	21 43 55.12
17	22 2 7.32	9.62	12 2 54.1	41.7	9.675	52.42	14 15.61	13.15	6.52	21 47 51.67
18	22 5 59.17	61.45	11 41 50.2	37.7	9.647	52.89	14 10.91	12.93	6.42	21 51 48.22
19	22 9 50.35	52.61	11 20 35.2	22.7	9.619	53.34	14 5.53	12.71	6.32	21 55 44.78
20	22 13 40.87	43.11	10 58 69.5	57.0	9.591	53.78	13 59.48	12.49	6.22	21 59 41.33
21	22 17 30.74	32.96	10 37 33.5	21.0	9.564	54.20	13 52.78	12.27	6.12	22 3 37.88
22	22 21 19.96	22.16	10 15 47.7	35.1	9.537	54.60	13 45.43	12.04	6.03	22 7 34.44
23	22 25 8.54	10.71	9 53 52.4	39.8	9.511	54.98	13 37.46	11.82	5.94	22 11 30.99
24	22 28 56.50	58.64	9 31 48.2	35.7	9.486	55.35	13 28.87	11.59	5.85	22 15 27.54
25	22 32 43.87	45.98	9 9 35.4	23.1	9.461	55.70	13 19.68	11.36	5.76	22 19 24.10
26	22 36 30.64	32.72	8 47 14.4	2.1	9.436	56.03	13 9.90	11.13	5.68	22 23 20.65
27	22 40 16.83	18.88	8 24 45.7	33.5	9.412	56.35	12 59.53	10.90	5.60	22 27 17.20
28	22 44 2.45	4.47	8 1 69.6	57.5	9.389	56.65	12 48.59	10.66	5.50	22 31 13.75
29	22 47 47.53	49.51	7 39 26.6	14.6	9.367	56.93	12 37.11	10.43	5.44	22 35 10.31
30	22 51 32.08	34.02	7 16 37.1	25.3	9.346	57.19	12 25.10	10.19	5.37	22 39 6.86
31	22 55 16.11	18.01	6 53 41.5	29.8	9.325	57.44	+12 12.58	16 9.95	5.30	22 43 3.41

NOTE. — For Mean Interval of Semidiameter passing the Meridian, subtract 0.18 from the Sideral Interval.

SOLAR EPHEMERIS, 1868.

329

AT WASHINGTON MEAN AND APPARENT NOON.

Date.	APPARENT RIGHT ASCENSION.			APPARENT DECLINATION.			HOURLY MOTION.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. passing Merid.	Sidereal Time of Mean Noon.
	Mean Noon.	Ap- parent Noon.		Mean Noon.	Ap- parent Noon.		Right Ascension.	Declination.				
	h m s	s		° ' "	"		s	"	m s	"	m	h m s
Mar. 1	22 51 32.08	34.02	—	7 16 37.1	25.3	9.346	57.19	+12 25.10	16 10.19	1 5.37	22 39 6.86	
2	22 55 16.11	18.01		6 53 41.5	29.8	9.325	57.44	12 12.58	9.95	5.30	22 43 3.41	
3	22 58 59.64	61.50		6 30 40.2	28.6	9.304	57.67	11 59.57	9.70	5.23	22 46 59.97	
4	23 2 42.70	44.52		6 7 33.6	22.2	9.285	57.88	11 46.08	9.46	5.17	22 50 56.51	
5	23 6 25.30	27.08		5 44 22.0	10.8	9.266	58.08	11 32.12	9.21	5.11	22 54 53.07	
6	23 10 7.47	9.21		5 20 65.8	54.8	9.248	58.27	11 17.74	8.96	5.05	22 58 49.62	
7	23 13 49.24	50.94		4 57 45.4	34.6	9.232	58.43	11 2.96	8.71	4.99	23 2 46.17	
8	23 17 30.63	32.29		4 34 21.2	10.6	9.217	58.58	10 47.79	8.44	4.93	23 6 42.72	
9	23 21 11.65	13.27		4 10 53.5	43.1	9.202	58.72	10 32.26	8.18	4.88	23 10 39.27	
10	23 24 52.33	53.90		3 47 22.6	12.4	9.188	58.84	10 16.39	7.92	4.83	23 14 35.83	
11	23 28 32.70	34.23		3 23 49.0	39.1	9.175	58.95	10 0.21	7.65	4.79	23 18 32.38	
12	23 32 12.78	14.27		3 0 13.0	3.4	9.164	59.04	9 43.74	7.38	4.75	23 22 28.93	
13	23 35 52.60	54.05		2 36 35.0	25.6	9.153	59.12	9 27.01	7.11	4.71	23 26 25.48	
14	23 39 32.17	33.57		2 12 55.3	46.2	9.144	59.18	9 10.03	6.84	4.67	23 30 22.03	
15	23 43 11.52	12.87		1 49 14.3	5.5	9.135	59.23	8 52.82	6.56	4.63	23 34 18.59	
16	23 46 50.68	51.98		1 25 32.3	23.8	9.127	59.25	8 35.43	6.28	4.60	23 38 15.14	
17	23 50 29.65	30.91		1 1 49.8	41.5	9.121	59.27	8 17.86	6.00	4.57	23 42 11.69	
18	23 54 8.46	9.68		0 37 67.0	59.0	9.115	59.28	8 0.13	5.73	4.55	23 46 8.24	
19	23 57 47.13	48.30	—	0 14 24.4	16.8	9.109	59.26	7 42.25	5.45	4.53	23 50 4.79	
20	0 1 25.67	26.79	+	0 9 17.7	24.9	9.104	59.23	7 24.25	5.17	4.51	23 54 1.34	
21	0 5 4.11	5.19		0 32 58.9	65.8	9.100	59.19	7 6.13	4.89	4.49	23 57 57.90	
22	0 8 42.47	43.50		0 56 38.9	45.5	9.097	59.13	6 47.93	4.62	4.48	0 1 54.45	
23	0 12 20.75	21.73		1 20 17.3	23.7	9.094	59.06	6 29.66	4.34	4.47	0 5 50.99	
24	0 15 58.97	59.91		1 43 53.6	59.7	9.092	58.97	6 11.35	4.06	4.46	0 9 47.55	
25	0 19 37.16	38.05		2 7 27.5	33.2	9.090	58.86	5 52.99	3.78	4.46	0 13 44.10	
26	0 23 15.32	16.16		2 30 58.7	64.1	9.089	58.73	5 34.59	3.51	4.46	0 17 40.66	
27	0 26 53.47	54.26		2 54 26.7	31.8	9.089	58.60	5 16.20	3.23	4.46	0 21 37.22	
28	0 30 31.64	32.39		3 17 51.2	56.0	9.090	58.44	4 57.82	2.96	4.46	0 25 33.76	
29	0 34 9.84	10.55		3 41 11.9	16.2	9.092	58.27	4 39.47	2.68	4.47	0 29 30.31	
30	0 37 48.09	48.75		4 4 28.4	32.4	9.095	58.09	4 21.17	2.41	4.48	0 33 26.86	
31	0 41 26.40	27.01		4 27 40.3	44.1	9.098	57.90	4 2.93	2.13	4.49	0 37 23.41	
Apr. 1	0 45 4.79	5.36		4 50 47.3	50.8	9.102	57.68	3 44.77	1.86	4.51	0 41 19.97	
2	0 48 43.29	43.82		5 13 49.0	52.2	9.106	57.45	3 26.73	1.59	4.53	0 45 16.52	
3	0 52 21.92	22.41		5 36 45.0	48.0	9.113	57.21	3 8.81	1.32	4.56	0 49 13.07	
4	0 56 0.70	1.14		5 59 35.2	37.9	9.120	56.96	2 51.03	1.05	4.59	0 53 9.62	
5	0 59 39.64	40.03		6 22 19.1	21.5	9.127	56.70	2 33.41	0.78	4.62	0 57 6.17	
6	1 3 18.76	19.10		6 44 56.4	58.6	9.135	56.42	2 15.99	0.50	4.65	1 1 2.73	
7	1 6 58.10	58.39		7 7 26.7	28.7	9.144	56.12	1 58.79	16 0.23	4.68	1 4 59.28	
8	1 10 37.69	37.94		7 29 49.8	51.5	9.154	55.81	1 41.83	15 59.96	4.71	1 8 55.84	
9	1 14 17.55	17.76		7 52 5.3	6.7	9.165	55.49	1 25.15	59.69	4.75	1 12 52.38	
10	1 17 57.69	57.86		8 14 12.9	14.0	9.177	55.15	1 8.75	59.41	4.79	1 16 48.94	
11	1 21 38.12	38.35		8 36 12.2	13.0	9.190	54.79	0 52.63	59.14	4.83	1 20 45.49	
12	1 25 18.83	18.92		8 58 3.1	3.7	9.203	54.43	0 36.79	58.86	4.88	1 24 42.04	
13	1 28 59.86	59.91		9 19 45.1	45.4	9.217	54.05	0 21.27	58.59	4.93	1 28 38.59	
14	1 32 41.25	41.26		9 41 17.9	18.1	9.232	53.66	+ 0 6.10	58.31	4.98	1 32 35.15	
15	1 36 23.02	22.99		10 2 41.2	41.1	9.248	53.26	— 0 8.68	58.04	5.03	1 36 31.70	
16	1 40 5.18	5.12		10 23 54.6	54.3	9.265	52.85	0 23.07	57.76	5.09	1 40 28.25	
17	1 43 47.74	47.64		10 44 57.8	57.3	9.282	52.42	0 37.06	57.49	5.14	1 44 24.81	
18	1 47 30.70	30.56		11 5 50.6	49.9	9.299	51.97	0 50.66	57.22	5.20	1 48 21.36	
19	1 51 14.08	13.91		11 26 32.5	31.6	9.317	51.51	1 3.83	56.95	5.26	1 52 17.91	
20	1 54 57.90	57.70		11 47 3.1	2.1	9.335	51.03	1 16.56	56.69	5.32	1 56 14.46	
21	1 58 42.15	41.92		12 7 22.1	20.9	9.352	50.54	1 28.85	56.44	5.39	2 0 11.02	
22	2 2 26.85	26.59		12 27 29.3	27.9	9.372	50.04	1 40.70	56.19	5.46	2 4 7.57	
23	2 6 12.01	11.72		12 47 24.1	22.5	9.391	49.52	1 52.10	55.94	5.53	2 8 4.12	
24	2 9 57.63	57.31		13 7 6.4	4.7	9.411	48.99	2 3.03	55.69	5.60	2 12 0.68	
25	2 13 43.73	43.38		13 26 35.8	34.0	9.430	48.45	2 13.49	55.44	5.67	2 15 57.23	
26	2 17 30.30	29.92		13 45 52.0	50.1	9.450	47.90	2 23.47	55.20	5.74	2 19 53.78	
27	2 21 17.36	16.95		14 4 54.5	52.6	9.470	47.33	2 32.96	54.96	5.81	2 23 50.34	
28	2 25 4.91	4.48		14 23 43.2	41.2	9.491	46.74	2 41.96	54.72	5.89	2 27 46.89	
29	2 28 52.96	52.51		14 42 17.6	15.4	9.513	46.13	2 50.46	54.48	5.96	2 31 43.45	
30	2 32 41.53	41.06		15 0 37.3	35.0	9.535	45.51	2 58.45	54.25	6.04	2 35 40.00	
31	2 36 30.61	30.12	+15 18 42.1	39.8	9.556	44.89	— 3 5.92	15 54.02	1 6.12	2 39 36.55		

NOTE. — For Mean Interval of Semidiameter passing the Meridian, subtract 0.18 from the Sidereal Interval.

330 SOLAR EPHEMERIS, 1868.

AT WASHINGTON MEAN AND APPARENT NOON.

Date.	APPARENT RIGHT ASCENSION.		APPARENT DECLINATION.		HOURLY MOTION.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. passing Merid.	Sidereal Time of Mean Noon.
	Mean Noon.	Apparent Noon.	Mean Noon.	Apparent Noon.	Right Ascension.	Declination.				
May	^h ^m ^s	^s	[°] ['] ["]		^s	['] ["]	^m ^s	['] ["]	^m ^s	^h ^m ^s
1	2 36 30.61	30.12	+15 18 42.1	39.8	9.556	44.89	- 3 5.92	15 54.02	6.12	2 39 36.55
2	2 40 20.22	19.71	15 36 31.7	29.4	9.578	44.24	3 12.86	53.79	6.20	2 43 33.11
3	2 44 10.36	9.83	15 54 5.8	3.4	9.600	43.59	3 19.27	53.36	6.28	2 47 29.66
4	2 48 1.05	0.50	16 11 24.1	21.6	9.623	42.92	3 25.15	53.34	6.36	2 51 26.22
5	2 51 52.29	51.72	16 28 26.1	23.6	9.646	42.24	3 30.48	53.11	6.44	2 55 22.77
6	2 55 44.09	43.51	16 45 11.6	9.1	9.669	41.53	3 35.23	52.89	6.52	2 59 19.33
7	2 59 36.46	35.87	17 1 40.5	38.0	9.693	40.85	3 39.41	52.67	6.60	3 3 15.88
8	3 3 29.40	28.80	17 17 52.5	50.0	9.717	40.14	3 43.03	52.45	6.69	3 7 12.44
9	3 7 22.92	22.31	17 33 47.2	44.7	9.741	39.41	3 46.07	52.23	6.77	3 11 8.99
10	3 11 17.02	16.40	17 49 24.2	21.7	9.766	38.67	3 48.53	52.02	6.86	3 15 5.54
11	3 15 11.71	11.08	18 4 43.5	41.0	9.791	37.93	3 50.39	51.81	6.94	3 19 2.10
12	3 19 6.99	6.36	18 19 44.6	42.2	9.816	37.17	3 51.66	51.60	7.02	3 22 58.65
13	3 23 2.87	2.24	18 34 27.4	25.1	9.841	36.39	3 52.33	51.39	7.10	3 26 55.21
14	3 26 59.34	58.70	18 48 51.5	49.2	9.865	35.60	3 52.42	51.19	7.18	3 30 51.77
15	3 30 56.40	55.76	19 2 56.6	54.4	9.890	34.81	3 51.93	50.99	7.26	3 34 48.32
16	3 34 54.04	53.40	19 16 42.3	40.2	9.914	34.00	3 50.85	50.79	7.34	3 38 44.88
17	3 38 52.26	51.63	19 30 8.6	6.5	9.938	33.18	3 49.19	50.59	7.42	3 42 41.43
18	3 42 51.05	50.43	19 43 15.2	13.1	9.962	32.35	3 46.96	50.40	7.50	3 46 37.98
19	3 46 50.41	49.79	19 55 61.8	59.8	9.985	31.52	3 44.16	50.21	7.58	3 50 34.54
20	3 50 50.32	49.70	20 8 28.0	26.1	10.008	30.66	3 40.79	50.03	7.65	3 54 31.10
21	3 54 50.77	50.16	20 20 33.6	31.8	10.030	29.79	3 36.88	49.85	7.73	3 58 27.65
22	3 58 51.76	51.16	20 32 18.4	16.7	10.051	28.92	3 32.46	49.68	7.80	4 2 24.21
23	4 2 53.26	52.68	20 43 42.2	40.6	10.072	28.04	3 27.52	49.52	7.88	4 6 20.77
24	4 6 55.27	54.70	20 54 44.5	43.0	10.092	27.15	3 22.07	49.36	7.95	4 10 17.32
25	4 10 57.77	57.22	21 5 25.3	23.8	10.113	26.24	3 16.12	49.20	8.02	4 14 13.88
26	4 15 0.74	0.21	21 15 44.3	42.9	10.133	25.33	3 9.71	49.05	8.09	4 18 10.43
27	4 19 4.17	3.65	21 25 41.3	40.0	10.152	24.41	3 2.84	48.90	8.15	4 22 6.99
28	4 23 8.05	7.55	21 35 16.0	14.9	10.171	23.48	2 55.52	48.75	8.21	4 26 3.55
29	4 27 12.36	11.88	21 44 28.2	27.2	10.189	22.54	2 47.77	48.61	8.27	4 30 0.10
30	4 31 17.09	16.63	21 53 17.8	16.8	10.206	21.59	2 39.60	48.47	8.33	4 33 56.66
31	4 35 22.22	21.78	22 1 44.6	43.7	10.222	20.63	2 31.02	48.34	8.39	4 37 53.22
June	4 39 27.74	27.33	22 9 48.3	47.5	10.238	19.67	2 22.05	48.21	8.45	4 41 49.77
2	4 43 33.64	33.25	22 17 28.9	24.2	10.253	18.70	2 12.70	48.08	8.50	4 45 46.33
3	4 47 39.89	39.53	22 24 46.1	45.5	10.268	17.72	2 3.01	47.96	8.55	4 49 42.88
4	4 51 46.49	46.16	22 31 39.3	39.3	10.282	16.74	1 52.97	47.84	8.60	4 53 39.43
5	4 55 53.43	53.13	22 38 9.8	9.3	10.296	15.76	1 42.59	47.72	8.65	4 57 35.99
6	5 0 0.60	0.42	22 44 16.0	15.6	10.309	14.77	1 31.88	47.61	8.69	5 1 32.56
7	5 4 8.25	8.01	22 49 58.3	58.0	10.321	13.77	1 20.88	47.50	8.74	5 5 29.11
8	5 8 16.09	15.88	22 55 16.6	16.4	10.332	12.77	1 9.59	47.39	8.78	5 9 25.67
9	5 12 24.21	24.03	23 0 10.9	10.7	10.343	11.76	0 58.03	47.29	8.81	5 13 22.23
10	5 16 32.57	32.43	23 4 41.0	40.8	10.353	10.75	0 46.21	47.18	8.84	5 17 18.78
11	5 20 41.17	41.07	23 8 46.7	46.6	10.363	9.74	0 34.16	47.08	8.87	5 21 15.34
12	5 24 49.99	49.93	23 12 27.9	27.8	10.371	8.72	0 21.90	46.98	8.89	5 25 11.90
13	5 28 58.99	58.96	23 15 44.6	44.6	10.378	7.70	- 0 9.46	46.89	8.91	5 29 8.45
14	5 33 8.15	8.16	23 18 36.8	36.8	10.384	6.67	+ 0 3.14	46.80	8.93	5 33 5.01
15	5 37 17.45	17.50	23 21 4.4	4.4	10.390	5.64	0 15.88	46.72	8.94	5 37 1.57
16	5 41 26.88	26.97	23 23 7.3	7.3	10.395	4.61	0 28.75	46.64	8.95	5 40 58.13
17	5 45 36.42	36.54	23 24 45.5	45.6	10.398	3.57	0 41.73	46.58	8.96	5 44 54.68
18	5 49 46.03	46.18	23 25 59.0	59.1	10.399	2.54	0 54.78	46.52	8.97	5 48 51.24
19	5 53 55.65	55.85	23 26 47.6	47.7	10.400	1.51	1 7.86	46.46	8.97	5 52 47.80
20	5 58 5.28	5.52	23 27 11.5	11.5	10.400	0.48	1 20.94	46.40	8.97	5 56 44.35
21	6 2 14.90	15.18	23 27 10.6	10.6	10.399	0.55	1 34.00	46.35	8.97	6 0 40.91
22	6 6 24.48	24.79	23 26 44.9	44.9	10.396	1.59	1 47.03	46.31	8.97	6 4 37.47
23	6 10 33.98	34.33	23 25 54.4	54.3	10.393	2.62	1 59.98	46.27	8.96	6 8 34.02
24	6 14 43.39	43.78	23 24 39.1	39.0	10.388	3.65	2 12.82	46.23	8.95	6 12 30.58
25	6 18 52.66	53.09	23 22 59.2	59.0	10.382	4.68	2 25.54	46.21	8.93	6 16 27.14
26	6 23 1.79	2.26	23 20 54.6	54.4	10.375	5.70	2 38.11	46.19	8.91	6 20 23.69
27	6 27 10.74	11.24	23 18 25.4	25.1	10.368	6.72	2 50.51	46.17	8.88	6 24 20.25
28	6 31 19.49	20.02	23 15 31.7	31.3	10.359	7.74	3 2.71	46.16	8.85	6 28 16.81
29	6 35 28.02	28.59	23 12 13.5	13.0	10.350	8.76	3 14.68	46.15	8.82	6 32 13.37
30	6 39 36.31	36.91	23 8 30.9	30.3	10.339	9.78	3 26.42	46.15	8.79	6 36 9.92
31	6 43 44.33	44.96	+23 4 24.0	23.4	10.327	10.79	+ 3 37.88	15 46.15	8.76	6 40 6.48

NOTE. — For Mean Interval of Semidiameter passing the Meridian, subtract 0.18 from the Sidereal Interval.

SOLAR EPHEMERIS, 1868. 331

AT WASHINGTON MEAN AND APPARENT NOON.

Date.	APPARENT RIGHT ASCENSION.		APPARENT DECLINATION.		HOURLY MOTION.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. passing Merid.	Sidereal Time of Mean Noon.
	Mean Noon.	Apparent Noon.	Mean Noon.	Apparent Noon.	Right Ascension.	Declination.				
July 1	h m s	a	+23° 4' 24.0	23.4	10.327	10.79	+ 3 37.88	15 46.15	m	h m s
2	6 43 44.33	44.96	22 59 52.9	52.2	10.315	11.79	3 49.06	46.15	8.76	6 40 6.48
3	6 47 52.08	52.74	22 54 57.7	56.9	10.303	12.79	3 59.95	46.15	8.72	6 44 3.04
4	6 51 59.52	60.21	22 49 34.6	37.7	10.290	13.79	4 10.54	46.16	8.68	6 47 59.59
5	6 56 6.65	7.37	22 43 55.7	54.7	10.276	14.78	4 20.78	46.16	8.64	6 51 56.15
6	7 0 13.46	14.21	22 37 49.1	48.0	10.261	15.77	4 30.68	46.17	8.59	6 55 52.71
7	7 4 19.92	20.70	22 31 19.0	17.7	10.246	16.75	4 40.22	46.18	8.54	6 59 49.26
8	7 8 26.01	26.81	22 24 25.4	24.0	10.230	17.72	4 49.38	46.20	8.49	7 3 45.82
9	7 12 31.73	32.55	22 17 8.7	7.2	10.213	18.68	4 58.16	46.23	8.43	7 7 42.38
10	7 16 37.07	37.91	22 9 20.0	27.4	10.196	19.63	5 6.53	46.26	8.37	7 11 38.93
11	7 20 42.01	42.87	22 1 26.3	24.6	10.179	20.58	5 14.49	46.29	8.31	7 15 35.49
12	7 24 46.52	47.40	21 52 61.0	50.2	10.161	21.52	5 22.02	46.32	8.25	7 19 32.05
13	7 28 50.60	51.50	21 44 13.1	11.1	10.142	22.46	5 29.09	46.36	8.18	7 23 28.60
14	7 32 54.23	55.15	21 35 2.9	0.7	10.123	23.38	5 35.70	46.40	8.11	7 27 25.16
15	7 36 57.40	58.34	21 25 30.7	28.4	10.103	24.29	5 41.83	46.44	8.04	7 31 21.72
16	7 41 0.09	1.05	21 15 36.6	34.3	10.082	25.20	5 47.47	46.49	7.97	7 35 18.27
17	7 45 2.29	3.26	21 5 20.8	18.2	10.060	26.10	5 52.62	46.55	7.90	7 39 14.83
18	7 49 3.99	4.97	20 54 43.5	40.9	10.038	26.99	5 57.25	46.62	7.82	7 43 11.39
19	7 53 5.17	6.16	20 43 45.1	42.4	10.015	27.87	6 1.32	46.69	7.75	7 47 7.94
20	7 57 5.81	6.81	20 32 25.7	22.9	9.992	28.73	6 4.85	46.76	7.67	7 51 4.50
21	8 1 5.89	6.90	20 20 45.6	42.6	9.968	29.59	6 7.81	46.84	7.59	7 55 1.05
22	8 5 5.41	6.43	20 8 45.0	41.8	9.944	30.44	6 10.19	46.92	7.51	7 58 57.61
23	8 9 4.36	5.38	19 56 24.3	21.0	9.920	31.28	6 12.00	47.01	7.43	8 2 54.17
24	8 13 2.72	3.75	19 43 43.6	40.3	9.895	32.10	6 13.22	47.10	7.35	8 6 50.72
25	8 17 0.49	1.52	19 30 43.3	39.9	9.870	32.91	6 13.82	47.20	7.27	8 10 47.28
26	8 20 57.65	58.68	19 17 23.5	20.0	9.844	33.72	6 13.82	47.31	7.18	8 14 43.83
27	8 24 54.20	55.22	19 3 44.7	41.1	9.818	34.51	6 13.81	47.31	7.10	8 18 40.39
28	8 28 50.14	51.16	18 49 47.0	43.3	9.792	35.28	6 13.19	47.42	7.01	8 22 36.95
29	8 32 45.46	46.47	18 35 30.7	27.0	9.766	36.05	6 11.95	47.54	6.93	8 26 33.50
30	8 36 40.16	41.16	18 20 56.1	52.3	9.740	36.81	6 10.09	47.78	6.84	8 30 30.06
31	8 40 34.24	35.24	18 5 63.5	59.7	9.714	37.56	6 7.61	47.80	6.76	8 34 26.61
Aug. 1	8 44 27.70	28.69	17 50 53.1	49.3	9.689	38.29	6 4.51	48.03	6.67	8 38 23.17
2	8 48 20.54	21.51	17 35 25.4	21.5	9.664	39.01	6 0.79	48.16	6.59	8 42 19.72
3	8 52 12.77	13.73	17 19 40.4	36.5	9.639	39.73	5 56.46	48.29	6.50	8 46 16.28
4	8 56 4.40	5.34	17 3 38.6	34.7	9.614	40.43	5 51.54	48.43	6.42	8 50 12.83
5	8 59 55.43	56.36	16 47 20.2	16.3	9.589	41.11	5 46.02	48.57	6.33	8 54 9.39
6	9 3 45.87	46.78	16 30 45.4	41.5	9.565	41.78	5 39.90	48.71	6.25	8 58 5.94
7	9 7 35.72	36.61	16 13 54.6	50.7	9.540	42.44	5 33.19	48.86	6.16	9 2 2.50
8	9 11 24.99	25.86	15 56 48.1	44.2	9.516	43.08	5 25.91	49.01	6.08	9 5 59.05
9	9 15 13.69	14.54	15 39 26.2	22.4	9.493	43.72	5 18.06	49.16	5.99	9 9 55.61
10	9 19 1.83	2.65	15 21 49.1	45.4	9.471	44.35	5 9.64	49.31	5.91	9 13 52.16
11	9 22 49.42	50.22	15 3 57.2	53.6	9.449	44.96	5 0.66	49.47	5.82	9 17 48.71
12	9 26 36.47	37.24	14 45 50.8	47.3	9.427	45.55	4 51.15	49.63	5.74	9 21 45.27
13	9 30 22.97	23.71	14 27 30.2	26.8	9.406	46.14	4 41.11	49.80	5.65	9 25 41.82
14	9 34 8.94	9.65	14 8 55.7	52.4	9.383	46.72	4 30.53	49.97	5.57	9 29 38.38
15	9 37 54.38	55.06	13 50 7.7	4.4	9.361	47.28	4 19.42	50.14	5.49	9 33 34.93
16	9 41 39.30	39.95	13 31 6.3	3.1	9.340	47.83	4 7.79	50.32	5.41	9 37 31.49
17	9 45 23.72	24.33	13 11 52.0	49.0	9.319	48.36	3 55.65	50.50	5.33	9 41 28.04
18	9 49 7.63	8.20	12 52 25.2	22.3	9.298	48.88	3 43.00	50.69	5.25	9 45 24.59
19	9 52 51.04	51.57	12 32 46.1	43.3	9.278	49.38	3 29.86	50.88	5.18	9 49 21.15
20	9 56 33.96	34.46	12 12 55.0	52.4	9.258	49.87	3 16.23	51.07	5.11	9 53 17.70
21	10 0 16.40	16.87	11 52 52.3	49.9	9.239	50.35	3 2.12	51.27	5.04	9 57 14.25
22	10 3 58.37	58.80	11 32 38.3	36.2	9.219	50.81	2 47.53	51.47	4.98	10 1 10.81
23	10 7 39.87	40.26	11 12 13.3	11.4	9.200	51.25	2 32.48	51.68	4.92	10 5 7.36
24	10 11 20.91	21.26	10 51 37.8	36.1	9.182	51.69	2 16.97	51.90	4.86	10 9 3.91
25	10 15 1.51	1.82	10 30 52.0	50.4	9.164	52.12	2 1.02	52.12	4.80	10 13 0.47
26	10 18 41.69	41.96	10 9 56.2	54.9	9.148	52.53	1 44.64	52.34	4.74	10 16 57.02
27	10 22 21.45	21.68	9 48 50.8	49.7	9.132	52.92	1 27.85	52.56	4.69	10 20 53.57
28	10 26 0.80	0.98	9 27 36.1	35.3	9.116	53.30	1 10.65	52.78	4.63	10 24 50.13
29	10 29 39.77	39.90	9 6 12.4	11.8	9.101	53.67	0 53.08	53.01	4.58	10 28 46.68
30	10 33 18.39	18.48	8 44 39.9	39.6	9.087	54.02	0 35.15	53.24	4.53	10 32 43.23
31	10 36 56.67	56.72	+ 8 22 59.1	59.1	9.074	54.37	+ 0 16.88	53.47	4.48	10 36 39.78
	10 40 34.62	34.62					- 0 1.72	53.70	4.43	10 40 36.34

NOTE. — For Mean Interval of Semidiameter passing the Meridian, subtract 0.18 from the Sidereal Interval.

332 SOLAR EPHEMERIS, 1868.

AT WASHINGTON MEAN AND APPARENT NOON.

Date.	APPARENT RIGHT ASCENSION.			APPARENT DECLINATION.			HOURLY MOTION.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. passing Merid.	Sidereal Time of Mean Noon.
	Mean Noon.	Ap- parent Noon.		Mean Noon.	Ap- parent Noon.		Right Ascension.	Declination.				
Sep.	1	10 44 12.26	12.21	+ 8 1 10.2	10.4		9.062	54.76	- 0 20.64	15 53.93	1 4.39	10 44 32.89
	2	10 47 49.61	49.51	7 39 13.6	14.1		9.051	55.02	0 39.83	54.16	4.35	10 48 29.44
	3	10 51 26.70	26.55	7 17 9.4	10.3		9.040	55.32	0 59.28	54.40	4.31	10 52 26.00
	4	10 55 3.55	3.35	6 54 58.2	59.4		9.031	55.61	1 18.18	54.64	4.27	10 56 22.55
	5	10 58 40.18	39.93	6 32 40.1	41.6		9.022	55.89	1 38.90	54.88	4.23	11 0 19.10
	6	11 2 16.60	16.30	6 10 15.5	17.3		9.014	56.15	1 59.02	55.12	4.20	11 4 15.65
	7	11 5 52.84	52.49	5 47 44.7	46.8		9.008	56.40	2 19.33	55.36	4.17	11 8 12.21
	8	11 9 28.93	28.53	5 25 8.0	10.4		9.002	56.64	2 39.80	55.60	4.15	11 12 8.75
	9	11 13 4.87	4.42	5 2 25.8	28.6		8.996	56.87	3 0.39	55.85	4.13	11 16 5.31
	10	11 16 40.70	40.20	4 39 38.3	41.5		8.991	57.08	3 21.10	56.10	4.11	11 20 1.86
	11	11 20 16.43	15.87	4 16 45.9	49.5		8.987	57.28	3 41.92	56.34	4.09	11 23 58.41
	12	11 23 52.07	51.46	3 53 48.9	52.8		8.984	57.47	4 2.83	56.59	4.08	11 27 54.96
	13	11 27 27.64	26.98	3 30 47.6	51.9		8.982	57.63	4 23.80	56.85	4.07	11 31 51.51
	14	11 31 3.17	2.46	3 7 42.4	47.0		8.980	57.79	4 44.83	57.11	4.06	11 35 48.07
	15	11 34 38.66	37.90	2 44 33.7	38.6		8.979	57.93	5 5.89	57.37	4.06	11 39 44.62
	16	11 38 14.14	13.33	2 21 21.7	27.0		8.978	58.06	5 26.96	57.63	4.06	11 43 41.17
	17	11 41 49.61	48.75	1 58 6.8	12.4		8.978	58.17	5 48.02	57.90	4.06	11 47 37.73
	18	11 45 25.10	24.18	1 34 49.4	55.4		8.979	58.27	6 9.08	58.17	4.06	11 51 34.28
	19	11 48 50.62	49.64	1 11 29.9	36.2		8.980	58.35	6 30.11	58.44	4.07	11 55 30.83
	20	11 52 36.19	35.16	0 48 8.6	15.3		8.983	58.41	6 51.09	58.71	4.08	11 59 27.38
	21	11 56 11.83	10.75	0 24 45.8	52.9		8.986	58.47	7 12.00	58.98	4.09	12 3 23.94
	22	11 59 47.56	46.43	+ 0 1 21.9	29.3		8.990	58.51	7 42.82	59.25	4.10	12 7 20.49
	23	12 3 23.39	22.21	- 0 21 62.7	55.0		8.995	58.53	7 53.53	59.53	4.12	12 11 17.04
	24	12 6 59.34	58.11	0 45 27.7	19.7		9.001	58.54	8 14.12	59.81	4.15	12 15 13.59
	25	12 10 35.43	34.14	1 8 52.7	44.3		9.008	58.54	8 34.58	60.09	4.18	12 19 10.14
	26	12 14 11.69	10.35	1 32 17.4	8.6		9.015	58.52	8 54.88	0.37	4.21	12 23 6.69
	27	12 17 48.14	46.75	1 55 41.5	32.4		9.023	58.48	9 14.98	0.64	4.24	12 27 3.24
	28	12 21 24.80	23.36	2 18 64.5	55.1		9.032	58.43	9 34.86	0.93	4.27	12 30 59.80
	29	12 25 1.69	0.20	2 42 26.3	16.6		9.042	58.37	9 54.52	1.21	4.31	12 34 56.35
	30	12 28 38.84	37.30	3 5 46.4	36.4		9.054	58.30	10 13.92	1.49	4.35	12 38 52.90
Oct.	1	12 32 16.27	14.68	3 28 64.4	54.2		9.066	58.21	10 33.05	1.77	4.39	12 42 49.45
	2	12 35 54.00	52.36	3 52 20.0	9.5		9.079	58.10	10 51.86	2.05	4.44	12 46 46.00
	3	12 39 32.07	30.38	4 15 33.1	22.3		9.093	57.98	11 10.34	2.32	4.49	12 50 42.55
	4	12 43 10.49	8.75	4 38 43.1	32.0		9.108	57.85	11 28.48	2.59	4.54	12 54 39.11
	5	12 46 49.29	47.50	5 1 49.6	38.2		9.125	57.70	11 46.23	2.86	4.60	12 58 35.66
	6	12 50 28.49	26.65	5 24 52.5	40.9		9.142	57.53	12 3.58	3.13	4.66	13 2 32.21
	7	12 54 8.10	6.22	5 47 51.3	39.5		9.160	57.36	12 20.51	3.41	4.72	13 6 28.76
	8	12 57 48.16	46.23	6 10 45.7	33.7		9.179	57.17	12 37.01	3.68	4.79	13 10 25.31
	9	13 1 28.68	26.70	6 33 35.3	23.1		9.198	56.96	12 53.04	3.95	4.86	13 14 21.87
	10	13 5 9.69	7.66	6 56 19.8	7.5		9.218	56.74	13 8.58	4.22	4.93	13 18 18.42
	11	13 8 51.20	49.13	7 18 58.7	46.2		9.240	56.50	13 23.64	4.50	5.00	13 22 14.97
	12	13 12 33.22	31.11	7 41 31.8	19.1		9.262	56.24	13 38.19	4.77	5.07	13 26 11.53
	13	13 16 15.76	13.61	8 3 58.5	45.6		9.284	55.97	13 42.19	5.05	5.15	13 30 8.08
	14	13 19 58.86	56.67	8 26 18.5	5.5		9.307	55.68	14 5.64	5.31	5.23	13 34 4.63
	15	13 23 42.52	40.29	8 48 31.5	18.4		9.331	55.38	14 18.54	5.59	5.31	13 38 1.18
	16	13 27 26.76	24.49	9 10 37.1	23.8		9.355	55.07	14 30.85	5.86	5.40	13 41 57.74
	17	13 31 11.59	9.28	9 32 34.8	21.4		9.380	54.74	14 42.57	6.13	5.49	13 45 54.29
	18	13 34 57.02	54.68	9 54 24.0	10.5		9.406	54.38	14 53.69	6.40	5.58	13 49 50.84
	19	13 38 43.07	40.70	10 15 64.5	50.9		9.432	54.01	15 4.20	6.68	5.67	13 53 47.39
	20	13 42 29.75	27.35	10 37 36.0	22.4		9.458	53.62	15 14.09	6.95	5.76	13 57 43.95
	21	13 46 17.07	14.64	10 58 57.9	44.3		9.485	53.21	15 23.34	7.22	5.86	14 1 40.50
	22	13 50 5.05	2.58	11 19 69.9	56.2		9.513	52.79	15 31.92	7.49	5.96	14 5 37.05
	23	13 53 53.69	51.19	11 40 71.6	57.9		9.541	52.35	15 39.84	7.77	6.06	14 9 33.61
	24	13 57 43.02	40.49	12 1 62.6	48.9		9.570	51.89	15 47.07	8.04	6.16	14 13 30.16
	25	14 1 33.04	30.50	12 22 42.3	28.7		9.599	51.41	15 53.69	8.31	6.27	14 17 26.71
	26	14 5 23.78	21.22	12 42 70.5	56.9		9.629	50.92	15 59.41	8.58	6.37	14 21 23.27
	27	14 9 15.25	12.67	13 3 26.7	13.2		9.660	50.42	16 4.51	8.84	6.48	14 25 19.82
	28	14 13 7.46	4.86	13 23 30.6	17.2		9.691	49.89	16 8.86	9.10	6.59	14 29 16.37
	29	14 16 50.42	57.80	13 43 21.7	8.4		9.723	49.35	16 12.47	9.35	6.70	14 33 12.93
	30	14 20 54.15	51.51	14 2 59.8	46.5		9.755	48.80	16 15.32	9.60	6.81	14 37 9.48
	31	14 24 48.67	46.01	14 22 24.3	11.2		9.788	48.23	16 17.36	9.85	6.92	14 41 6.04
	32	14 28 43.99	41.31	-14 41 34.9	21.9		9.821	47.64	-16 18.60	10.11	7.03	14 45 2.59

NOTE. — For Mean Interval of Semidiameter passing the Meridian, subtract 0.18 from the Sidereal Interval.

SOLAR EPHEMERIS, 1868. 333

AT WASHINGTON MEAN AND APPARENT NOON.

Date.	APPARENT RIGHT ASCENSION.			APPARENT DECLINATION.			HOURLY MOTION.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. passing Merid.	Sidereal Time of Mean Noon.
	Mean Noon.	Ap- parent Noon.		Mean Noon.	Ap- parent Noon.		Right Ascension.	Declination.				
Nov. 1	h m s	° ' "		° ' "	° ' "		° ' "	° ' "	m s	° ' "	m s	h m s
2	14 28 43.99	41.31		14 41 34.9	21.9		9.821	47.64	-16 18.60	16 10.11	7.03	14 45 2.59
3	14 32 40.11	37.43		15 0 31.2	18.4		9.855	47.04	16 19.03	10.34	7.15	14 48 59.14
4	14 36 37.06	34.37		15 19 12.8	0.2		9.890	46.42	16 18.64	10.58	7.27	14 52 55.70
5	14 40 34.85	32.15		15 37 39.4	26.9		9.925	45.78	16 17.42	10.82	7.39	14 56 52.25
6	14 44 33.48	30.78		15 55 50.5	38.2		9.961	45.13	16 15.35	11.05	7.51	15 0 48.81
7	14 48 32.97	30.27		16 13 45.8	33.7		9.997	44.46	16 12.43	11.28	7.63	15 4 45.36
8	14 52 33.31	30.61		16 31 24.8	13.0		10.033	43.78	16 8.65	11.51	7.75	15 8 41.92
9	14 56 34.51	31.81		16 48 47.2	35.6		10.069	43.08	16 4.02	11.73	7.87	15 12 38.47
10	15 0 36.58	33.89		17 5 52.5	41.2		10.105	42.36	15 58.52	12.95	7.99	15 16 35.03
11	15 4 39.51	36.83		17 22 40.3	29.3		10.141	41.62	15 52.15	12.17	8.11	15 20 31.58
12	15 8 43.31	40.64		17 38 70.2	59.4		10.177	40.87	15 44.91	12.39	8.23	15 24 28.13
13	15 12 47.97	45.31		17 55 21.9	11.4		10.213	40.10	15 36.81	12.60	8.35	15 28 24.69
14	15 16 53.48	50.84		18 11 15.0	4.8		10.248	39.31	15 27.86	12.81	8.47	15 32 21.25
15	15 20 59.85	57.22		18 26 48.9	39.1		10.283	38.50	15 18.06	13.02	8.58	15 36 17.80
16	15 25 7.07	4.46		18 41 63.2	53.8		10.318	37.68	15 7.41	13.23	8.69	15 40 14.36
17	15 29 15.12	12.53		18 56 57.6	48.5		10.352	36.84	14 55.92	13.44	8.80	15 44 10.91
18	15 33 24.00	21.44		19 11 31.8	23.0		10.386	35.99	14 43.69	13.64	8.92	15 48 7.47
19	15 37 33.70	31.18		19 25 45.2	36.7		10.420	35.12	14 30.46	13.85	9.03	15 52 4.02
20	15 41 44.21	41.73		19 39 37.5	29.4		10.454	34.24	14 16.51	14.05	9.15	15 56 0.58
21	15 45 55.51	53.07		19 53 8.4	0.6		10.487	33.33	14 1.77	14.25	9.26	15 59 57.13
22	15 50 7.59	5.18		20 6 17.5	10.1		10.520	32.41	13 46.25	14.45	9.37	16 3 53.69
23	15 54 20.44	18.06		20 18 64.3	57.3		10.552	31.48	13 29.96	14.64	9.48	16 7 50.25
24	15 58 34.06	31.72		20 31 28.5	21.8		10.584	30.53	13 12.90	14.83	9.59	16 11 46.80
25	16 2 48.43	46.14		20 43 29.8	23.4		10.615	29.57	12 55.10	15.01	9.70	16 15 43.36
26	16 7 3.53	1.29		20 55 7.9	1.9		10.645	28.60	12 36.55	15.19	9.80	16 19 39.91
27	16 11 19.36	17.17		21 6 22.5	16.9		10.675	27.62	12 17.28	15.36	9.90	16 23 36.47
28	16 15 35.91	33.78		21 17 13.2	8.0		10.704	26.62	11 57.20	15.53	10.00	16 27 33.03
29	16 19 53.16	51.09		21 27 39.6	34.7		10.733	25.60	11 36.60	15.69	10.10	16 31 29.58
30	16 24 11.09	9.08		21 37 41.6	37.0		10.761	24.56	11 15.22	15.84	10.20	16 35 26.14
Dec. 1	16 28 29.69	27.73		21 47 18.7	14.5		10.789	23.52	10 53.18	15.99	10.29	16 39 22.70
2	16 32 48.93	47.03		21 56 30.9	27.0		10.816	22.48	10 30.51	16.14	10.38	16 43 19.25
3	16 37 8.80	6.97		22 5 17.7	14.1		10.841	21.42	10 7.20	16.28	10.46	16 47 15.81
4	16 41 29.29	27.53		22 13 39.0	35.7		10.866	20.35	9 43.25	16.42	10.54	16 51 12.37
5	16 45 50.37	48.68		22 21 34.5	31.6		10.890	19.27	9 18.72	16.55	10.62	16 55 8.92
6	16 50 12.02	10.41		22 29 3.9	1.3		10.914	18.18	8 53.63	16.68	10.69	16 59 5.48
7	16 54 34.23	32.69		22 36 6.9	4.5		10.936	17.08	8 27.99	16.80	10.74	17 3 2.04
8	16 58 56.96	55.50		22 42 43.5	41.3		10.957	15.97	8 1.81	16.91	10.82	17 6 58.59
9	17 3 20.18	18.80		22 48 53.4	51.4		10.977	14.85	7 35.13	17.02	10.88	17 10 55.15
10	17 7 43.86	42.56		22 54 36.3	34.6		10.996	13.72	7 7.99	17.13	10.94	17 14 51.71
11	17 12 7.98	6.76		22 59 52.1	50.6		11.013	12.59	6 40.42	17.23	10.99	17 18 48.26
12	17 16 32.49	31.35		23 4 40.6	39.4		11.029	11.45	6 12.48	17.33	11.04	17 22 44.82
13	17 20 57.38	56.32		23 9 1.7	0.7		11.044	10.31	5 44.13	17.43	11.09	17 26 41.37
14	17 25 22.60	21.63		23 12 55.1	54.3		11.057	9.16	5 15.47	17.52	11.13	17 30 37.94
15	17 29 48.11	47.23		23 16 20.8	20.2		11.068	8.00	4 46.50	17.61	11.17	17 34 34.47
16	17 34 13.89	13.10		23 19 18.7	18.2		11.078	6.83	4 17.26	17.70	11.20	17 38 31.03
17	17 38 39.88	39.18		23 21 48.5	48.1		11.087	5.66	3 47.81	17.78	11.22	17 42 27.61
18	17 43 6.06	5.45		23 23 50.2	49.9		11.093	4.49	3 18.18	17.86	11.24	17 46 24.16
19	17 47 32.38	31.86		23 25 23.8	23.6		11.099	3.31	2 48.42	17.93	11.26	17 50 20.72
20	17 51 58.81	58.38		23 26 29.1	20.0		11.103	2.13	2 18.53	18.00	11.28	17 54 17.28
21	17 56 25.31	24.97		23 27 6.1	6.1		11.105	0.95	1 48.58	18.06	11.29	17 58 13.84
22	18 0 51.85	51.61		23 27 14.8	14.8		11.106	0.23	1 18.58	18.12	11.30	18 2 10.39
23	18 5 18.39	18.24		23 26 55.3	55.3		11.105	1.41	0 48.59	18.18	11.30	18 6 6.95
24	18 9 44.89	44.83		23 26 7.4	7.4		11.102	2.59	0 18.63	18.23	11.30	18 10 3.51
25	18 14 11.33	11.37		23 24 51.3	51.3		11.099	3.76	+ 0 11.27	18.27	11.29	18 14 0.07
26	18 18 37.68	37.81		23 23 6.9	6.9		11.095	4.94	0 41.06	18.31	11.28	18 17 56.62
27	18 23 3.89	4.11		23 20 54.3	54.2		11.088	6.11	1 10.72	18.34	11.26	18 21 53.18
28	18 27 29.94	30.25		23 18 13.5	13.3		11.081	7.28	1 40.23	18.37	11.23	18 25 49.74
29	18 31 55.79	56.19		23 15 4.7	4.4		11.073	8.45	2 9.53	18.39	11.20	18 29 46.30
30	18 36 21.43	21.92		23 11 27.9	27.5		11.064	9.61	2 38.61	18.41	11.17	18 33 42.85
31	18 40 46.83	47.41		23 7 23.2	22.7		11.052	10.77	3 7.45	18.42	11.14	18 37 39.41
32	18 45 11.96	12.62		23 2 50.8	50.1		11.040	11.92	3 36.04	18.42	11.10	18 41 35.97
33	18 49 36.78	37.53		22 57 50.8	50.0		11.027	13.06	+ 4 4.33	16 18.42	11.06	18 45 32.52

Note. — For Mean Interval of Semidiameter passing the Meridian, subtract 0s.18 from the Sidereal Interval.

334 MOON-CULMINATIONS, 1868.

WASHINGTON MERIDIAN.											
Date.	Meridian Transit.	Hourly Diff.	Sideral Time of Semid. passing Merid.	Stars.	Bright Lamb.	Date.	Meridian Transit.	Hourly Diff.	Sideral Time of Semid. passing Merid.	Stars.	Bright Lamb.
Jan. 1	h m	m	s			Mar. 1	h m	m	s		
2	5 6.66	1.851	62.74	171 .. 174	I.	2	5 50.75	2.272	69.15	26 .. 29	I.
3	5 51.62	1.902	63.56	2 .. 5	I.	3	6 46.62	2.381	70.74	32 .. 35	I.
4	6 38.23	1.989	64.93	7 .. 10	I.	4	7 44.79	2.458	71.81	37 .. 40	I.
5	7 27.38	2.113	66.80	11 .. 14	I.	5	8 44.23	2.486	72.15	45 .. 48	I.
6	8 19.87	2.265	69.02	17 .. 20	I.	6	9 43.68	2.460	71.71	58 .. 61	I.
7	9 16.18	2.426	71.29	24 .. 27	I.	7	10 41.98	2.394	70.71	66 .. 69	I.
8	10 16.13	2.561	73.15	30 .. 33	I.	8	11 38.44	2.309	69.44	73 .. 76	I.
9	11 18.62	2.633	74.10	37 .. 40	I.	9	12 32.83	2.225	68.21	82 .. 85	II.
10	12 21.82	2.618	73.89	45 .. 48	II.	10	13 25.36	2.155	67.19	90 .. 93	II.
11	13 23.67	2.526	72.62	58 .. 61	II.	11	14 16.43	2.104	66.47	98 .. 101	II.
12	14 22.70	2.390	70.73	66 .. 69	II.	12	15 6.50	2.071	66.03	106 .. 109	II.
13	15 18.34	2.247	68.71	73 .. 76	II.	13	15 55.94	2.051	65.79	110 .. 113	II.
14	16 10.71	2.124	66.93	82 .. 85	II.	14	16 45.00	2.038	65.65	116 .. 119	II.
15	17 05.52	2.033	65.58	90 .. 93	II.	15	17 33.76	2.025	65.49	124 .. 127	II.
16	17 48.56	1.976	64.72	98 .. 101	II.	16	18 22.18	2.008	65.23	129 .. 132	II.
17	18 35.61	1.950	64.31	106 .. 109	II.	17	19 10.10	1.985	64.84	136 .. 139	II.
18	19 22.33	1.947	64.23	109 .. 112	II.	18	19 57.39	1.955	64.33	143 .. 146	II.
19	20 9.17	1.959	64.36	114 .. 117	II.	19	20 43.92	1.923	63.76	149 .. 152	II.
20	20 56.37	1.975	64.54	122 .. 125	II.	20	21 29.72	1.894	63.23	153 .. 156	II.
21	21 43.91	1.985	64.63	128 .. 131	II.	21	22 14.89	1.873	62.83		II.
22	22 31.56	1.983	64.54		II.	22	22 59.72	1.866	62.67		II.
23	23 18.97	1.965	64.22		II.	23	23 44.59	1.877	62.82		II.
24	0 5.79	1.934	63.71		II.	24	0 29.98	1.909	63.33		I.
25	0 51.76	1.897	63.13		I.	25	1 16.44	1.965	64.24		I.
26	1 36.84	1.861	62.60		I.	26	2 4.50	2.043	65.49		I.
27	2 21.19	1.837	62.27		I.	27	2 54.64	2.137	66.99	17 .. 20	I.
28	3 5.19	1.833	62.27	169 .. 172	I.	28	3 47.14	2.237	68.55	23 .. 26	I.
29	3 49.38	1.855	62.69	2 .. 5	I.	29	4 41.96	2.327	69.92	29 .. 32	I.
30	4 34.46	1.908	63.59	5 .. 8	I.	30	5 38.62	2.389	70.85	35 .. 38	I.
31	5 21.22	1.995	64.98	9 .. 12	I.	31	6 36.31	2.411	71.16	41 .. 44	I.
Feb. 1	6 10.46	2.113	66.82	15 .. 18	I.	April 1	7 34.00	2.390	70.83	52 .. 55	I.
2	7 2.85	2.255	68.93	20 .. 23	I.	2	8 30.77	2.338	70.03	61 .. 64	I.
3	7 58.74	2.401	71.00	27 .. 30	I.	3	9 26.08	2.271	68.98	69 .. 72	I.
4	8 57.88	2.520	72.63	33 .. 36	I.	4	10 19.77	2.205	67.96	80 .. 83	I.
5	9 59.24	2.581	73.43	39 .. 42	I.	5	11 12.04	2.153	67.14	84 .. 87	I.
6	11 1.19	2.568	73.19	51 .. 54	I.	6	12 3.26	2.118	66.60	95 .. 98	II.
7	12 2.01	2.491	72.08	61 .. 64	I.	7	12 53.83	2.099	66.33	103 .. 106	II.
8	13 0.47	2.377	70.47	68 .. 71	II.	8	13 44.08	2.090	66.24	108 .. 111	II.
9	13 56.08	2.258	68.77	80 .. 83	II.	9	14 34.17	2.084	66.21	112 .. 115	II.
10	14 48.98	2.154	67.28	84 .. 87	II.	10	15 24.09	2.074	66.13	122 .. 125	II.
11	15 39.69	2.076	66.16	95 .. 98	II.	11	16 13.65	2.054	65.89	128 .. 131	II.
12	16 28.86	2.025	65.44	103 .. 106	II.	12	17 2.61	2.023	65.46	134 .. 137	II.
13	17 17.09	1.998	65.05	108 .. 111	II.	13	17 50.70	1.983	64.86	141 .. 144	II.
14	18 4.90	1.988	64.92	111 .. 114	II.	14	18 37.76	1.939	64.17	147 .. 150	II.
15	18 52.60	1.987	64.89	121 .. 124	II.	15	19 23.82	1.900	63.52	153 .. 156	II.
16	19 40.30	1.988	64.86	126 .. 129	II.	16	20 9.03	1.871	63.00	156 .. 159	II.
17	20 27.97	1.983	64.72	131 .. 134	II.	17	20 53.74	1.858	62.75	163 .. 166	II.
18	21 15.40	1.968	64.42	139 .. 142	II.	18	21 38.40	1.867	62.83	168 .. 171	II.
19	22 2.37	1.944	63.97		II.	19	22 23.58	1.902	63.32		II.
20	22 48.68	1.914	63.44		II.	20	23 9.89	1.962	64.22		II.
21	23 34.25	1.884	62.92		II.	21	23 57.95	2.046	65.51		II.
22	0 19.17	1.861	62.54		I.	22	0 48.26	2.148	67.08		I.
23	1 3.67	1.851	62.40		I.	23	1 41.13	2.256	68.72		I.
24	1 48.17	1.861	62.60		I.	24	2 36.45	2.350	70.16		I.
25	2 33.19	1.895	63.20		I.	25	3 33.68	2.411	71.10	33 .. 36	I.
26	3 19.36	1.956	64.23	4 .. 7	I.	26	4 31.79	2.424	71.34	39 .. 42	I.
27	4 7.32	2.044	65.66	9 .. 12	I.	27	5 29.63	2.389	70.87	48 .. 51	I.
28	4 57.65	2.153	67.36	18 .. 21	I.	28	6 26.18	2.320	69.88	59 .. 62	I.
29	5 50.75	2.272	69.15	26 .. 29	I.	29	7 20.89	2.239	68.66	67 .. 70	I.
30	6 46.62	2.381	70.74	32 .. 35	I.	30	8 13.69	2.164	67.50	76 .. 79	I.

MOON-CULMINATIONS, 1868. 335

WASHINGTON MERIDIAN.

Date.	Meridian Transit.	Hourly Diff.	Sideral Time of Semi- passing Merid.	Stars.	Bright Limbs.	Date.	Meridian Transit.	Hourly Diff.	Sideral Time of Semi- passing Merid.	Stars.	Bright Limbs.
	^h ^m ^s	^m	^s				^h ^m ^s	^m	^s		
May 1	8 13.69	2.164	67.50	76.. 79	I.	July 1	9 52.78	2.043	65.60	121..124	I.
2	9 4.89	2.107	66.59	83.. 86	I.	2	10 41.97	2.054	65.71	126..129	I.
3	9 55.02	2.074	66.03	90.. 93	I.	3	11 31.20	2.045	65.56	132..135	I.
4	10 44.64	2.064	65.83	100..103	I.	4	12 19.97	2.015	65.11	139..142	II.
5	11 34.21	2.069	65.89	106..109	I.	5	13 7.77	1.967	64.37	146..149	II.
6	12 24.01	2.082	66.08	110..113	II.	6	13 54.32	1.911	63.51	151..154	II.
7	13 14.09	2.090	66.23	118..121	II.	7	14 30.49	1.856	62.70	156..159	II.
8	14 4.22	2.085	66.21	125..128	II.	8	15 23.48	1.813	62.08	163..166	II.
9	14 54.02	2.062	65.93	130..133	II.	9	16 6.70	1.793	61.81	168..171	II.
10	15 43.06	2.022	65.38	137..140	II.	10	16 49.76	1.801	61.99	173.. 2	II.
11	16 30.98	1.970	64.64	144..147	II.	11	17 33.41	1.842	62.68	4.. 7	II.
12	17 17.62	1.917	63.84	150..153	II.	12	18 18.49	1.920	63.92	9.. 12	II.
13	18 3.06	1.872	63.13	155..158	II.	13	19 5.89	2.035	65.69	11.. 14	II.
14	18 47.59	1.843	62.67	159..162	II.	14	19 56.40	2.180	67.86	18.. 21	II.
15	19 31.71	1.838	62.55	166..169	II.	15	20 50.62	2.339	70.14	26.. 29	II.
16	20 16.04	1.861	62.88	173.. 2	II.	16	21 48.56	2.483	72.17		II.
17	21 1.30	1.916	63.69	3.. 6	II.	17	22 49.44	2.577	73.45		II.
18	21 48.26	2.002	64.98		II.	18	23 51.68	2.595	73.65		II.
19	22 37.62	2.116	66.67		II.	20	0 53.35	2.536	72.84		I.
20	23 29.95	2.246	68.59		II.	21	1 52.92	2.424	71.29		I.
22	0 25.39	2.371	70.42		I.	22	2 49.58	2.298	69.51		I.
23	1 23.51	2.465	71.79		I.	23	3 43.33	2.186	67.91	83.. 86	I.
24	2 23.24	2.501	72.36		I.	24	4 34.71	2.101	66.68	90.. 93	I.
25	3 23.05	2.472	72.01	45.. 48	I.	25	5 24.44	2.049	65.91	101..104	I.
26	4 21.49	2.391	70.91	58.. 61	I.	26	6 13.27	2.025	65.54	106..109	I.
27	5 17.63	2.285	69.40	66.. 69	I.	27	7 1.80	2.022	65.47	110..113	I.
28	6 11.20	2.181	67.87	72.. 75	I.	28	7 50.42	2.030	65.55	117..120	I.
29	7 2.50	2.098	66.60	82.. 85	I.	29	8 39.24	2.037	65.60	124..127	I.
30	7 52.14	2.044	65.73	86.. 89	I.	30	9 28.12	2.034	65.50	130..133	I.
31	8 40.84	2.020	65.31	96.. 99	I.	31	10 16.74	2.014	65.13	136..139	I.
June 1	9 29.28	2.021	65.27	105..108	I.	Aug. 1	11 4.67	1.977	64.52	143..146	I.
2	10 17.97	2.038	65.48	109..112	I.	2	11 51.56	1.929	63.74	149..152	I.
3	11 7.16	2.061	65.79	114..117	I.	3	12 37.21	1.876	62.90	154..157	II.
4	11 56.82	2.075	66.01	122..125	I.	4	13 21.65	1.829	62.18	159..162	II.
5	12 46.64	2.072	65.97	128..131	II.	5	14 5.13	1.797	61.70	165..168	II.
6	13 36.11	2.047	65.62	134..137	II.	6	14 48.09	1.787	61.59	172.. 1	II.
7	14 24.71	2.001	64.97	141..144	II.	7	15 31.12	1.805	61.95	2.. 5	II.
8	15 12.07	1.944	64.15	148..151	II.	8	16 14.96	1.854	62.80	7.. 10	II.
9	15 58.04	1.887	63.31	153..156	II.	9	17 0.37	1.937	64.16	10.. 13	II.
10	16 42.75	1.841	62.62	156..159	II.	10	17 48.18	2.052	65.97	17.. 20	II.
11	17 26.56	1.815	62.23	164..167	II.	11	18 39.07	2.192	68.08	22.. 25	II.
12	18 10.07	1.816	62.26	169..172	II.	12	19 33.46	2.340	70.23	29.. 32	II.
13	18 53.98	1.849	62.78	2.. 5	II.	13	20 31.23	2.468	72.02	34.. 37	II.
14	19 39.12	1.918	63.86	5.. 8	II.	14	21 31.54	2.546	73.08		II.
15	20 26.36	2.024	65.45	10.. 13	II.	15	22 32.94	2.557	73.16		II.
16	21 16.51	2.160	67.46	15.. 18	II.	16	23 33.77	2.503	72.38		II.
17	22 10.16	2.311	69.66	22.. 25	II.	18	0 32.77	2.409	71.04		I.
18	23 7.38	2.453	71.66	29.. 32	II.	19	1 29.33	2.305	69.55		I.
20	0 7.53	2.549	73.00	34.. 37	I.	20	2 23.49	2.212	68.23		I.
21	1 9.13	2.571	73.33	39.. 42	I.	21	3 15.69	2.143	67.26	95.. 98	I.
22	2 10.33	2.517	72.61	51.. 54	I.	22	4 6.53	2.098	66.63	105..108	I.
23	3 9.52	2.409	71.14	61.. 64	I.	23	4 56.56	2.074	66.31	109..112	I.
24	4 5.83	2.283	69.35	69.. 72	I.	24	5 46.19	2.063	66.15	114..117	I.
25	4 59.19	2.167	67.68	80.. 83	I.	25	6 35.61	2.055	66.02	123..126	I.
26	5 50.09	2.080	66.37	84.. 87	I.	26	7 24.82	2.044	65.80	128..131	I.
27	6 39.29	2.026	65.53	95.. 98	I.	27	8 13.62	2.021	65.40	134..137	I.
28	7 27.58	2.003	65.14	102..105	I.	28	9 1.72	1.985	64.78	141..144	I.
29	8 15.64	2.006	65.14	108..111	I.	29	9 48.85	1.941	64.02	148..151	I.
30	9 3.97	2.023	65.35	111..114	I.	30	10 34.85	1.892	63.20	153..156	I.
31	9 52.78	2.043	65.60	121..124	I.	31	11 19.72	1.848	62.45	156..159	I.

336 MOON-CULMINATIONS, 1868.

WASHINGTON MERIDIAN.											
Date.	Meridian Transit.	Hourly Diff.	Sidereal Time of Semid. passing Merid.	Stars.	Bright Limb.	Date.	Meridian Transit.	Hourly Diff.	Sidereal Time of Semid. passing Merid.	Stars.	Bright Limb.
	h m	m	s				h m	m	s		
Sept. 1	12 3.64	1.814	61.90	164 .. 167	II.	Nov. 1	13 17.41	2.178	67.69	22 .. 25	II.
2	12 46.94	1.798	61.65	169 .. 172	II.	2	14 10.95	2.275	69.24	29 .. 32	II.
3	13 30.11	1.804	61.78	2 .. 5	II.	3	15 6.62	2.345	70.36	34 .. 37	II.
4	14 13.72	1.836	62.35	5 .. 8	II.	4	16 3.53	2.375	70.85	39 .. 42	II.
5	14 58.44	1.896	63.37	9 .. 12	II.	5	17 0.61	2.361	70.68	50 .. 53	II.
6	15 44.93	1.984	64.81	14 .. 17	II.	6	17 56.87	2.315	69.97	60 .. 63	II.
7	16 33.82	2.095	66.57	20 .. 23	II.	7	18 51.72	2.254	69.01	68 .. 71	II.
8	17 25.55	2.217	68.46	27 .. 30	II.	8	19 45.05	2.196	68.08	77 .. 80	II.
9	18 20.21	2.336	70.21	32 .. 35	II.	9	20 37.12	2.154	67.40	83 .. 86	II.
10	19 17.45	2.427	71.50	38 .. 41	II.	10	21 28.45	2.135	67.06	92 .. 95	II.
11	20 16.35	2.472	72.09	45 .. 48	II.	11	22 19.60	2.138	67.07		II.
12	21 15.73	2.467	71.95		II.	12	23 11.06	2.154	67.32		II.
13	22 14.43	2.419	71.20		II.	14	0 3.05	2.174	67.64		I.
14	23 11.66	2.349	70.17		II.	15	0 55.44	2.183	67.81		I.
16	0 7.18	2.279	69.13		I.	16	1 47.81	2.169	67.67		I.
17	1 1.12	2.219	68.28		I.	17	2 39.56	2.129	67.13		I.
18	1 53.84	2.177	67.70		I.	18	3 30.02	2.067	66.23	141 .. 144	I.
19	2 45.75	2.150	67.35	107 .. 110	I.	19	4 18.76	1.992	65.10	147 .. 150	I.
20	3 37.12	2.132	67.15	111 .. 114	I.	20	5 5.63	1.916	63.92	153 .. 156	I.
21	4 28.09	2.115	66.92	120 .. 123	I.	21	5 50.75	1.852	62.90	156 .. 159	I.
22	5 18.58	2.091	66.61	126 .. 129	I.	22	6 34.52	1.808	62.18	163 .. 166	I.
23	6 8.39	2.057	66.10	132 .. 135	I.	23	7 17.54	1.712	61.88	168 .. 171	I.
24	6 57.25	2.013	65.39	141 .. 144	I.	24	8 0.56	1.608	62.06	174 .. 3	I.
25	7 44.95	1.961	64.53	146 .. 149	I.	25	8 44.31	1.854	62.76	4 .. 7	I.
26	8 31.38	1.909	63.64	151 .. 154	I.	26	9 29.58	1.934	63.97	9 .. 12	I.
27	9 16.60	1.861	62.83	156 .. 159	I.	27	10 17.14	2.042	65.61	13 .. 16	I.
28	10 0.82	1.827	62.20	163 .. 166	I.	28	11 7.59	2.167	67.53	19 .. 22	I.
29	10 44.42	1.810	61.88	168 .. 171	I.	29	12 1.18	2.201	69.42	27 .. 30	II.
30	11 27.86	1.814	61.92	173 .. 2	I.	30	12 57.58	2.389	70.92	32 .. 35	II.
Oct. 1	12 11.67	1.842	62.36	4 .. 7	II.	Dec. 1	13 55.87	2.440	71.73	38 .. 41	II.
2	12 56.47	1.895	63.24	9 .. 12	II.	2	14 54.68	2.432	71.65	45 .. 48	II.
3	13 42.82	1.973	64.49	11 .. 14	II.	3	15 52.58	2.373	70.82	58 .. 61	II.
4	14 31.24	2.068	66.02	18 .. 21	II.	4	16 48.60	2.288	69.55	66 .. 69	II.
5	15 22.10	2.171	67.68	25 .. 28	II.	5	17 42.40	2.200	68.24	73 .. 75	II.
6	16 15.43	2.266	69.20	30 .. 33	II.	6	18 34.20	2.129	67.15	82 .. 85	II.
7	17 10.88	2.340	70.36	36 .. 39	II.	7	19 24.61	2.087	66.47	88 .. 91	II.
8	18 7.76	2.380	70.95	44 .. 47	II.	8	20 14.38	2.075	66.24	98 .. 101	II.
9	19 5.12	2.381	70.92	53 .. 56	II.	9	21 4.20	2.088	66.41	106 .. 109	II.
10	20 2.04	2.350	70.39	62 .. 65	II.	10	21 54.60	2.116	66.80		II.
11	20 57.92	2.303	69.60	70 .. 73	II.	11	22 45.78	2.145	67.23		II.
12	21 52.57	2.254	68.81		II.	12	23 37.56	2.160	67.46		II.
13	22 46.12	2.216	68.19		II.	14	0 29.45	2.149	67.31		I.
14	23 38.93	2.193	67.83		II.	15	1 20.70	2.108	66.71		I.
16	0 31.38	2.183	67.72		I.	16	2 10.62	2.042	65.74		I.
17	1 23.72	2.180	67.73		I.	17	2 58.74	1.963	64.54	151 .. 154	I.
18	2 16.01	2.173	67.70		I.	18	3 44.85	1.885	63.36	155 .. 158	I.
19	3 8.05	2.155	67.52	123 .. 126	I.	19	4 29.24	1.822	62.37	161 .. 164	I.
20	3 59.46	2.120	67.06	129 .. 132	I.	20	5 12.32	1.782	61.74	167 .. 170	I.
21	4 49.80	2.068	66.30	136 .. 139	I.	21	5 54.76	1.772	61.58	173 .. 2	I.
22	5 38.72	2.005	65.34	143 .. 146	I.	22	6 37.36	1.796	61.96	3 .. 6	I.
23	6 26.05	1.940	64.29	149 .. 152	I.	23	7 20.96	1.856	62.91	7 .. 10	I.
24	7 11.84	1.881	63.31	154 .. 157	I.	24	8 6.46	1.953	64.41	11 .. 14	I.
25	7 56.34	1.836	62.52	158 .. 161	I.	25	8 54.72	2.082	66.38	17 .. 20	I.
26	8 39.99	1.812	62.06	165 .. 168	I.	26	9 46.38	2.228	68.58	22 .. 25	I.
27	9 23.33	1.813	61.99	171 .. 174	I.	27	10 41.68	2.370	70.66	29 .. 32	I.
28	10 7.00	1.840	62.37	2 .. 5	I.	28	11 40.13	2.476	72.22	35 .. 38	I.
29	10 51.64	1.894	63.21	7 .. 10	I.	29	12 40.53	2.519	72.86	41 .. 44	II.
30	11 37.93	1.974	64.46	10 .. 13	I.	30	13 41.06	2.491	72.47	53 .. 56	II.
31	12 26.41	2.072	66.01	17 .. 20	II.	31	14 40.11	2.410	71.29	62 .. 65	II.
32	13 17.41	2.178	67.69	22 .. 25	II.	32	15 36.72	2.305	69.74	71 .. 74	II.

MOON-CULMINATING STARS. 337

MEAN PLACES FOR 1868.0.

No.	Name.	Magni- tude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
1	α Piscium . . .	6.5	^h 0 ^m 13 ^s 48.44	+3.086	+ 7 27 25.9	+20.07
2	44 Piscium . . .	6	0 18 38.25	3.075	+ 1 12 31.6	19.99
3	10 Ceti . . .	6	0 19 51.22	3.077	— 0 46 52.0	19.98
4	δ Piscium . . .	4.5	0 41 50.12	3.108	+ 6 51 58.7	19.71
5	ϵ PISCIIUM . . .	4	0 56 5.72	3.109	7 10 43.4	19.46
6	ζ^1 Piscium . . .	5.4	1 6 50.17	+3.180	+ 6 52 85.9	+19.15
7	μ Piscium . . .	5	1 23 16.20	3.138	5 27 41.2	18.57
8	η PISCIIUM . . .	4.3	1 24 25.33	3.199	14 39 51.6	18.71
9	ν Piscium . . .	5.4	1 34 33.80	3.118	4 49 5.2	18.35
10	\circ PISCIIUM . . .	4	1 38 25.59	3.161	8 29 32.0	18.24
11	ξ^1 Ceti . . .	4.5	2 6 0.33	+3.169	+ 8 13 84.3	+17.06
12	ξ^2 Ceti . . .	4	2 21 8.63	3.184	7 52 1.1	16.37
13	μ Ceti . . .	4	2 37 48.56	3.234	9 33 17.8	15.44
14	π Arietis . . .	6.5	2 41 55.79	3.338	16 54 50.5	15.29
15	ϵ Arietis . . .	4.5	2 51 40.14	3.421	20 48 38.0	14.69
16	λ Ceti . . .	6.5	2 52 38.88	+3.215	+ 8 22 48.8	+14.64
17	δ Arietis . . .	4.5	3 4 5.10	3.421	19 13 31.6	13.94
18	ζ ARIETIS . . .	4.5	3 7 19.09	3.436	20 33 12.1	13.65
19	f Tauri . . .	4	3 23 35.41	3.306	12 28 54.9	12.65
20	η TAURI . . .	3	3 39 38.49	3.553	23 41 40.3	11.47
21	ϵ Tauri . . .	5	3 41 2.03	+3.281	+10 44 4.8	+11.38
22	λ Tauri . . .	3.4	3 53 22.18	3.317	12 6 54.5	10.54
23	Δ^1 Tauri . . .	5.4	3 56 58.66	3.536	21 43 6.9	10.20
24	γ TAURI . . .	4	4 12 17.02	3.407	15 18 22.7	9.05
25	ν^1 Tauri . . .	5.4	4 18 24.72	3.581	22 30 42.3	8.58
26	π TAURI . . .	4.3	4 20 54.67	+3.495	+18 53 5.7	+ 8.37
27	α TAURI . . .	1	4 28 20.92	3.435	16 14 20.7	7.64
28	τ Tauri . . .	4.5	4 34 19.51	3.594	22 42 4.3	7.32
29	ι Tauri . . .	5	4 55 12.50	3.582	21 23 55.0	5.56
30	11 ORIONIS . . .	5	4 57 1.72	3.426	15 13 3.5	5.41
31	\circ Tauri . . .	6	5 19 42.46	+3.603	+21 49 17.1	+ 3.54
32	119 Tauri . . .	6.5	5 24 28.61	3.517	18 29 35.6	3.11
33	ζ Tauri . . .	3.4	5 29 45.50	3.586	21 3 33.6	2.62
34	χ^1 Orionis . . .	5.4	5 46 33.97	3.552	20 14 55.6	+ 1.08
35	ν Orionis . . .	5.4	6 0 2.20	3.428	14 46 52.9	— 0.03
36	η Geminorum . . .	3.4	6 6 54.59	+3.624	+22 32 31.6	— 0.62
37	μ GEMINORUM . . .	3	6 14 58.50	3.633	22 34 41.4	1.45
38	γ GEMINORUM . . .	2.3	6 30 5.18	3.469	16 30 33.0	2.67
39	ξ Geminorum . . .	4.3	6 37 52.95	3.373	13 2 6.4	3.47
40	ζ Geminorum . . .	4	6 56 16.77	3.566	20 45 40.6	4.89
41	λ Geminorum . . .	4.3	7 10 30.46	+3.457	+16 46 38.7	— 6.08
42	δ GEMINORUM . . .	3.4	7 12 14.80	3.591	22 13 21.0	6.24
43	63 Geminorum . . .	6.5	7 19 54.23	3.570	21 42 46.4	6.93
44	6 Canis Minoris . . .	6.5	7 22 27.06	+3.347	+12 16 39.5	— 7.06

338 MOON-CULMINATING STARS.

MEAN PLACES FOR 1868.0.

No.	Name.	Magni- tude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
45	68 Geminorum .	6.5	^h 7 ^m 26 ^s 4.43	+3.431	+16° 6' 30.1	— 7.31
46	f Geminorum .	6	7 31 51.19	3.475	17 58 20.5	7.82
47	1 Cancrī . . .	6	7 49 29.77	3.418	16 8 25.9	9.22
48	5 Cancrī . . .	6	7 53 58.78	3.428	16 49 1.2	9.53
49	8 Cancrī . . .	6	7 57 43.27	3.351	13 29 31.5	9.91
50	μ ² Cancrī . . .	5	7 59 59.67	+3.543	+21 57 51.9	—10.05
51	12 Cancrī . . .	6	8 1 19.73	3.361	14 1 21.5	10.17
52	ζ ¹ Cancrī . . .	5.4	8 4 38.42	3.453	18 2 36.9	10.49
53	d ¹ Cancrī . . .	6	8 15 48.21	3.448	18 45 14.0	11.21
54	29 Cancrī . . .	6	8 21 15.37	3.358	14 38 42.9	11.66
55	θ Cancrī . . .	6	8 24 4.04	+3.433	+18 32 18.7	—11.84
56	c ¹ Cancrī . . .	6	8 29 56.05	3.257	10 6 47.9	12.21
57	39 Cancrī . . .	6	8 32 30.56	3.460	20 28 17.4	12.40
58	δ Cancrī . . .	4	8 37 10.87	3.422	18 38 14.7	12.94
59	A ² Cancrī . . .	6	8 39 41.77	3.296	12 35 32.1	12.93
60	α Cancrī . . .	4	8 51 15.98	+3.291	+12 22 0.8	—13.66
61	κ CANCRI . . .	5	9 0 35.72	3.256	11 11 51.0	14.23
62	π ² Cancrī . . .	6	9 7 56.45	3.323	15 29 16.1	14.64
63	ω Leonis . . .	6	9 21 23.30	3.221	9 37 46.3	15.48
64	h Leonis . . .	6	9 24 52.96	3.226	10 17 45.7	15.68
65	10 Leonis . . .	5.6	9 30 14.56	+3.174	+ 7 25 36.5	—15.90
66	o Leonis . . .	4.3	9 34 6.55	3.226	10 29 28.5	16.18
67	B. A. C. 3336	5.6	9 39 12.24	3.169	7 19 1.6	16.39
68	π Leonis . . .	5	9 53 14.27	3.180	8 40 34.3	17.09
69	α LEONIS . . .	1.2	10 1 20.43	3.204	12 36 40.6	17.42
70	43 Leonis . . .	6	10 16 6.04	+3.144	+ 7 12 42.8	—18.13
71	45 Leonis . . .	6	10 20 40.51	3.177	10 26 2.0	18.22
72	ρ LEONIS . . .	4	10 25 51.59	3.167	9 59 5.0	18.42
73	34 Sextantis . .	6	10 35 48.44	3.104	4 16 17.9	18.73
74	l LEONIS . . .	5	10 42 18.98	3.160	11 14 34.0	18.93
75	55 Leonis . . .	6	10 48 55.10	+3.092	+ 1 26 26.5	—19.10
76	d Leonis . . .	5	10 53 44.57	3.103	4 19 31.2	19.27
77	c Leonis . . .	5	10 53 54.28	3.118	6 48 35.2	19.26
78	χ Leonis . . .	5	10 58 12.45	3.102	8 2 54.9	19.41
79	p ⁵ Leonis . . .	5	11 7 0.56	3.085	+ 0 38 53.0	19.57
80	φ Leonis . . .	5.4	11 9 57.07	+3.053	— 2 55 50.5	—19.63
81	σ Leonis . . .	4	11 14 19.75	3.098	+ 6 45 7.8	19.68
82	79 Leonis . . .	6	11 17 15.94	3.084	+ 2 7 54.0	19.74
83	v LEONIS . . .	5.4	11 30 11.46	3.072	— 0 5 42.8	19.86
84	β Virginis . . .	3.4	11 43 49.20	3.128	+ 2 30 29.8	20.29
85	10 Virginis . . .	6	12 2 55.44	+3.074	+ 2 38 19.5	—20.28
86	η VIRGINIS . . .	3.4	12 13 9.21	3.068	+ 0 4 1.2	20.05
87	q Virginis . . .	6	12 26 58.12	3.092	— 8 43 24.4	19.89
88	f Virginis . . .	6	12 29 59.60	+3.086	— 5 6 19.6	—19.97

MOON-CULMINATING STARS. 339

MEAN PLACES FOR 1868.0.

No.	Name.	Magni- tude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
89	χ Virginis . .	5	^h 12 ^m 32 ^s 26.44	+3.095	— 7° 16' 5.7"	—19.90
90	γ Virginis . .	3.2	12 34 58.42	3.040	0 43 31.0	19.84
91	28 Virginis . .	6	12 35 8.38	3.100	6 46 22.9	19.84
92	38 Virginis . .	6	12 46 25.81	3.073	2 50 7.1	19.67
93	ψ Virginis . .	5	12 47 29.51	3.117	8 49 17.1	19.64
94	ϵ Virginis . .	6	12 52 51.75	+3.089	— 3 5 53.0	—19.49
95	48 Virginis . .	6	12 57 6.37	3.066	2 57 5.8	19.46
96	θ VIRGINIS . .	4.5	13 3 7.08	3.100	4 50 0.9	19.34
97	α VIRGINIS . .	1	13 18 14.53	3.153	10 28 16.8	18.93
98	ρ Virginis . .	5	13 25 6.40	3.117	5 34 24.3	18.74
99	λ Virginis . .	5	13 26 1.11	+3.153	— 9 29 2.3	—18.70
100	m Virginis . .	6	13 34 41.18	3.143	8 2 10.5	18.36
101	83 Virginis . .	6	13 37 22.82	3.227	15 30 54.6	18.34
102	86 Virginis . .	6	13 38 54.49	3.188	11 45 50.5	18.21
103	89 Virginis . .	5	13 42 42.20	3.249	17 28 32.3	18.12
104	94 Virginis . .	6	13 59 18.60	+3.169	— 8 15 37.5	—17.38
105	κ Virginis . .	4.5	14 5 51.53	3.197	9 39 32.2	17.10
106	λ Virginis . .	5.4	14 11 58.29	3.239	12 45 43.7	16.79
107	2 Libræ . .	6	14 16 19.57	3.219	11 6 36.0	16.70
108	5 Libræ . .	6	14 38 41.28	3.299	11 54 6.8	15.47
109	α^2 LIBRÆ . .	2.3	14 43 34.79	+3.306	—15 29 28.3	—15.22
110	β^1 Libræ . .	5.4	15 4 42.16	3.410	19 17 23.9	13.91
111	γ^1 Libræ . .	4	15 20 49.03	3.376	16 15 15.2	12.87
112	γ Libræ . .	4.5	15 28 8.69	3.346	14 20 49.1	12.32
113	θ Libræ . .	5.4	15 46 18.87	3.412	16 20 22.5	10.92
114	δ SCORPII . .	2.3	15 52 31.92	+3.536	—22 14 36.3	—10.60
115	β^1 SCORPII . .	2	15 57 45.84	3.477	19 26 29.8	10.22
116	γ^2 Scorpii . .	4	16 4 19.66	3.480	19 6 53.5	9.67
117	σ Scorpii . .	3.4	16 13 10.15	3.637	25 16 23.1	9.02
118	ψ Ophiuchi . .	5	16 16 22.89	3.503	19 43 32.9	8.82
119	χ Ophiuchi . .	6	16 19 22.60	+3.470	—18 9 14.3	— 8.52
120	α SCORPII . .	1.2	16 21 19.07	3.668	26 8 9.7	8.39
121	ω Ophiuchi . .	5	16 24 18.94	3.548	21 10 54.0	8.06
122	B. A. C. 5579 . .	5	16 33 56.48	3.463	17 29 1.5	7.33
123	20 Ophiuchi . .	5	16 42 32.01	3.313	10 32 48.4	6.73
124	29 Ophiuchi . .	6	16 54 8.02	+3.503	—18 41 14.9	— 5.67
125	η Ophiuchi . .	2.3	17 2 48.59	3.436	15 33 30.2	4.83
126	ν Serpentis . .	5.4	17 13 24.25	3.372	12 42 34.9	4.02
127	θ Ophiuchi . .	3.4	17 13 54.32	3.681	24 51 53.2	4.06
128	ξ Serpentis . .	4.3	17 30 1.76	3.434	15 18 44.6	2.66
129	\circ Serpentis . .	5.4	17 33 59.80	+3.369	—12 48 6.5	— 2.29
130	4 Sagittarii . .	5	17 51 44.01	3.661	23 48 2.4	— 0.73
131	μ^1 SAGITTARII . .	4	18 5 52.17	+3.586	—21 5 25.8	+ 0.50

340 MOON-CULMINATING STARS.

MEAN PLACES FOR 1868.0.

No.	Name.	Magni- tude.	Right Ascension.	Annual Variation.	Declination	Annual Variation.
132	21 Sagittarii . .	5	^h 18 ^m 17 ^s 29.27	+3.574	—20° 36' 33.7	+ 1.51
133	λ Sagittarii . .	3	18 19 49.47	3.707	25 29 31.0	1.51
134	B. A. C. 6379	5.4	18 21 40.50	3.419	14 38 50.9	1.88
135	24 Sagittarii . .	6	18 25 49.76	3.667	24 7 37.2	2.26
136	ν ¹ Sagittarii . .	5	18 46 11.92	8.626	22 54 14.4	4.02
137	ξ ² Sagittarii . .	4	18 49 51.14	+3.582	—21 16 37.9	+ 4.33
138	ο Sagittarii . .	4	18 56 46.23	3.599	21 55 53.7	4.89
139	π Sagittarii . .	3	19 1 54.67	3.574	21 13 48.9	5.36
140	d SAGITTARI . .	5	19 9 54.67	3.515	19 11 7.1	6.03
141	ρ ¹ Sagittarii . .	4	19 14 0.97	3.488	18 5 33.8	6.43
142	ν Sagittarii . .	5.4	19 14 10.03	+3.445	—16 12 1.7	+ 6.34
143	e ² Sagittarii . .	5	19 34 58.00	3.438	16 25 48.5	8.11
144	f Sagittarii . .	5	19 38 39.62	3.506	20 4 31.4	8.34
145	g Sagittarii . .	6.5	19 50 27.79	3.409	15 50 21.4	9.25
146	63 Sagittarii . .	6	19 54 34.63	3.366	13 59 57.3	9.69
147	ξ ² Capricorni . .	6	20 5 4.61	+3.350	—13 0 1.8	+10.25
148	α ² CAPRICORNI	3.4	20 10 43.70	3.334	12 57 6.0	10.84
149	ρ Capricorni . .	5	20 21 19.66	3.431	18 14 50.9	11.62
150	τ ² Capricorni . .	5	20 31 53.30	3.363	15 24 57.5	12.31
151	ε Aquarii . .	4.3	20 40 31.80	3.257	9 58 36.9	12.90
152	μ AQUARI . .	5.4	20 45 31.89	+3.241	— 9 28 35.9	+13.22
153	θ Capricorni . .	4	20 58 31.48	3.384	17 45 17.4	14.06
154	ν Aquarii . .	4.5	21 2 23.96	3.274	11 54 15.2	14.34
155	β AQUARI . .	3	21 24 36.50	3.165	6 9 1.3	15.62
156	ξ AQUARI . .	5.4	21 30 43.37	3.199	8 26 41.0	15.91
157	λ Capricorni . .	5.6	21 39 25.64	+3.238	—11 58 23.4	+16.42
158	θ AQUARI . .	4.5	22 9 52.00	3.171	8 26 22.0	17.75
159	ρ Aquarii . .	5.6	22 13 15.12	3.163	8 28 56.6	17.97
160	γ Aquarii . .	4.3	22 14 50.31	3.105	2 3 4.4	18.03
161	ζ Aquarii . .	3.4	22 22 2.02	3.091	0 41 38.9	18.30
162	ν Aquarii . .	5.4	22 23 39.51	+3.182	—11 21 6.5	+18.39
163	η AQUARI . .	4.3	22 28 34.35	3.084	0 47 49.1	18.42
164	κ Aquarii . .	5	22 30 55.12	3.113	4 54 28.4	18.47
165	78 Aquarii . .	6	22 47 41.78	3.129	— 7 54 14.7	19.08
166	β Piscium . .	5.4	22 57 9.70	3.057	+ 3 6 35.7	19.30
167	φ Aquarii . .	4.5	23 7 29.18	+3.113	— 6 45 35.8	+19.37
168	γ Piscium . .	4	23 10 19.33	3.110	+ 2 33 42.0	19.63
169	κ Piscium . .	5.4	23 20 10.03	3.079	0 31 59.9	19.65
170	ι PISCUM . .	4.5	23 33 9.74	3.085	4 54 39.6	19.47
171	19 Piscium . .	6	23 39 39.08	3.067	2 45 20.2	20.00
172	26 Piscium . .	6	23 48 22.78	+3.068	+ 6 20 16.4	+20.05
173	ο PISCUM . .	4	23 52 32.06	3.078	6 7 56.7	19.91
174	c ² Piscium . .	6	23 55 45.13	+3.066	+ 7 45 9.6	+20.02

FOR WASHINGTON MEAN NOON AND MIDNIGHT.

Date.	JANUARY.			FEBRUARY.			MARCH.		
	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Semi-Diameter.	Horizontal Parallax.	Hourly Diff.
d	15	55	+1.56	15	57	+2.07	15	58	+1.64
1.0	7.0	21.9		42.2	31.2		52.9	10.7	
1.5	12.4	41.7	1.74	49.1	56.6	2.14	58.3	30.4	1.64
2.0	15 18.3	56 3.6	1.91	56.2	82.6	2.18	16 3.7	58 50.1	1.62
2.5	15 24.8	56 27.5	2.07	16 3.3	58 48.9	2.17	16 8.9	59 9.4	1.57
3.0	15 31.8	56 53.2	2.21	16 10.4	59 14.8	2.13	16 13.9	59 27.9	1.49
3.5	15 39.2	57 20.5	2.32	16 17.2	59 40.0	2.03	16 18.6	59 45.1	1.36
4.0	15 47.0	57 48.9	2.40	16 23.7	60 3.6	1.87	16 22.9	60 0.6	1.20
4.5	15 54.9	58 18.1	2.44	16 29.5	60 25.0	1.67	16 26.5	60 13.9	0.99
5.0	16 2.9	58 47.5	2.44	16 34.5	60 43.6	1.40	16 29.3	60 24.4	0.74
5.5	16 10.9	59 16.6	2.37	16 38.6	60 58.6	1.08	16 31.3	60 31.7	0.46
6.0	16 18.5	59 44.5	2.25	16 41.6	61 9.6	0.72	16 32.3	60 35.5	+0.16
6.5	16 25.6	60 10.6	2.07	16 43.4	61 16.0	+0.33	16 32.4	60 35.5	-0.16
7.0	16 32.0	60 34.1	1.82	16 43.8	61 17.5	-0.07	16 31.3	60 31.6	0.50
7.5	16 37.4	60 54.2	1.51	16 42.9	61 14.2	0.48	16 29.1	60 23.6	0.82
8.0	16 41.8	61 10.3	1.15	16 40.6	61 6.0	0.88	16 25.9	60 11.9	1.13
8.5	16 45.0	61 21.9	0.76	16 37.1	60 53.1	1.25	16 21.7	59 56.5	1.42
9.0	16 46.8	61 28.5	+0.33	16 32.5	60 35.9	1.59	16 16.7	59 37.9	1.67
9.5	16 47.2	61 29.9	-0.10	16 26.8	60 15.0	1.87	16 10.8	59 16.5	1.87
10.0	16 46.1	61 26.1	0.53	16 20.2	59 51.0	2.10	16 4.4	58 53.0	2.03
10.5	16 43.7	61 17.2	0.94	16 13.0	59 24.5	2.27	15 57.6	58 27.8	2.14
11.0	16 40.0	61 3.6	1.31	16 5.4	58 56.4	2.38	15 50.4	58 1.6	2.20
11.5	16 35.1	60 45.7	1.64	15 57.4	58 27.3	2.44	15 43.2	57 34.9	2.22
12.0	16 29.3	60 24.2	1.92	15 49.4	57 57.9	2.43	15 36.0	57 8.4	2.18
12.5	16 22.6	59 59.7	2.13	15 41.5	57 28.9	2.38	15 28.9	56 42.6	2.10
13.0	16 15.4	59 33.1	2.27	15 33.9	57 0.7	2.20	15 22.2	56 17.9	2.00
13.5	16 7.7	59 5.1	2.37	15 26.5	56 33.8	2.17	15 15.9	55 54.7	1.86
14.0	15 59.9	58 36.3	2.40	15 19.7	56 8.6	2.02	15 10.1	55 33.3	1.69
14.5	15 52.0	58 7.4	2.38	15 13.4	55 45.4	1.84	15 4.8	55 14.1	1.51
15.0	15 44.3	57 39.1	2.32	15 7.6	55 24.4	1.66	15 0.2	54 57.1	1.32
15.5	15 36.8	57 11.6	2.23	15 2.5	55 5.6	1.46	14 56.2	54 42.5	1.11
16.0	15 29.7	56 45.5	2.11	14 58.1	54 49.3	1.26	14 53.0	54 30.5	0.89
16.5	15 23.1	56 21.0	1.97	14 54.3	54 35.4	1.06	14 50.4	54 21.1	0.68
17.0	15 16.9	55 58.3	1.81	14 51.2	54 23.8	0.86	14 48.5	54 14.2	0.47
17.5	15 11.2	55 37.6	1.65	14 48.7	54 14.7	0.67	14 47.4	54 9.9	0.26
18.0	15 6.1	55 18.8	1.48	14 46.8	54 7.8	0.48	14 46.9	54 8.0	-0.06
18.5	15 1.6	55 2.1	1.31	14 45.5	54 3.1	0.31	14 47.0	54 8.5	+0.14
19.0	14 57.6	54 47.5	1.14	14 44.8	54 0.4	-0.14	14 47.7	54 11.3	0.32
19.5	14 54.1	54 34.8	0.97	14 44.6	53 59.8	+0.02	14 49.1	54 16.1	0.48
20.0	14 51.2	54 24.1	0.82	14 44.9	54 0.9	0.17	14 50.9	54 22.9	0.64
20.5	14 48.8	54 15.2	0.67	14 45.7	54 3.8	0.30	14 53.2	54 31.4	0.77
21.0	14 46.9	54 8.1	0.52	14 46.9	54 8.1	0.42	14 56.0	54 41.5	0.89
21.5	14 45.4	54 2.7	0.38	14 48.4	54 13.8	0.52	14 59.0	54 52.8	0.99
22.0	14 44.4	53 58.9	0.25	14 50.3	54 20.7	0.62	15 2.4	55 5.2	1.07
22.5	14 43.7	53 56.6	0.14	14 52.5	54 28.8	0.72	15 6.0	55 18.6	1.14
23.0	14 43.5	53 55.6	-0.02	14 55.0	54 37.9	0.80	15 9.9	55 32.6	1.19
23.5	14 43.6	53 56.0	+0.08	14 57.7	54 47.9	0.87	15 13.8	55 47.1	1.22
24.0	14 44.0	53 57.6	0.19	15 0.7	54 58.8	0.96	15 17.8	56 1.9	1.24
24.5	14 44.8	54 0.5	0.30	15 3.9	55 10.6	1.02	15 21.9	56 16.9	1.25
25.0	14 46.0	54 4.7	0.40	15 7.3	55 23.2	1.08	15 26.0	56 32.0	1.25
25.5	14 47.4	54 10.1	0.50	15 11.0	55 36.6	1.15	15 30.1	56 47.0	1.24
26.0	14 49.2	54 16.8	0.61	15 14.8	55 50.7	1.21	15 34.2	57 1.8	1.22
26.5	14 51.4	54 24.8	0.72	15 18.9	56 5.7	1.28	15 38.1	57 16.4	1.20
27.0	14 54.0	54 34.2	0.84	15 23.2	56 21.4	1.34	15 42.0	57 30.7	1.17
27.5	14 56.9	54 44.9	0.96	15 27.7	56 37.9	1.41	15 45.8	57 44.6	1.15
28.0	15 0.2	54 57.2	1.09	15 32.4	56 55.2	1.47	15 49.5	57 58.3	1.12
28.5	15 4.0	55 11.0	1.22	15 37.3	57 13.2	1.53	15 53.1	58 11.4	1.08
29.0	15 8.2	55 26.4	1.35	15 42.4	57 31.9	1.58	15 56.6	58 24.2	1.04
29.5	15 12.8	55 43.4	1.48	15 47.6	57 51.1	1.62	15 59.9	58 36.5	1.00
30.0	15 17.9	56 2.0	1.61	15 52.9	58 10.7	1.64	16 3.1	58 48.2	0.95
30.5	15 23.3	56 22.1	1.74	15 58.3	58 30.4	1.64	16 6.1	58 59.3	0.89
31.0	15 29.3	56 43.8	1.87	16 3.7	58 50.1	1.62	16 9.0	59 9.5	0.81
31.5	15 35.6	57 6.9	+1.97	16 8.9	59 9.4	+1.57	16 11.5	59 18.8	+0.72

FOR WASHINGTON MEAN NOON AND MIDNIGHT.

Date.	APRIL.			MAY.			JUNE.		
	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Semi-Diameter.	Horizontal Parallax.	Hourly Diff.
d	16 13.7	59 26.9	+0.62	16 6.6	59 1.1	-0.52	15 37.3	57 13.2	-1.25
1.0	16 15.5	59 33.6	0.49	16 4.8	58 54.3	0.62	15 33.2	56 58.1	1.25
1.5	16 16.9	59 38.6	0.34	16 2.6	58 46.2	0.72	15 29.1	56 43.1	1.25
2.0	16 17.7	59 41.7	+0.17	16 0.0	58 36.9	0.83	15 25.0	56 28.2	1.24
2.5	16 18.0	59 42.7	-0.02	15 57.2	58 26.3	0.94	15 21.0	56 13.4	1.22
3.0	16 17.6	59 41.2	0.22	15 53.9	58 14.4	1.04	15 17.0	55 58.9	1.20
3.5	16 16.5	59 37.3	0.43	15 50.4	58 1.3	1.14	15 13.1	55 44.6	1.17
4.0	16 14.7	59 30.8	0.65	15 46.5	57 47.0	1.23	15 9.4	55 30.8	1.13
4.5	16 12.2	59 21.6	0.87	15 42.3	57 31.8	1.30	15 5.8	55 17.5	1.08
5.0	16 9.0	59 9.8	1.08	15 37.9	57 15.7	1.37	15 2.3	55 4.9	1.02
5.5	16 5.2	58 55.6	1.27	15 33.4	56 58.8	1.42	14 59.1	54 53.1	0.94
6.0	16 0.7	58 39.2	1.45	15 28.7	56 41.6	1.45	14 56.2	54 42.3	0.85
6.5	15 55.7	58 20.9	1.60	15 23.9	56 24.1	1.46	14 53.6	54 32.7	0.74
7.0	15 50.3	58 0.9	1.71	15 19.1	56 6.6	1.44	14 51.3	54 24.5	0.62
7.5	15 44.5	57 39.8	1.79	15 14.5	55 49.6	1.40	14 49.5	54 17.8	0.48
8.0	15 38.6	57 18.0	1.83	15 10.0	55 33.1	1.34	14 48.2	54 12.9	0.33
8.5	15 32.5	56 55.9	1.84	15 5.8	55 17.5	1.25	14 47.4	54 9.9	-0.17
9.0	15 26.5	56 33.8	1.82	15 1.8	55 3.1	1.14	14 47.1	54 8.8	0.00
9.5	15 20.7	56 12.3	1.75	14 58.3	54 50.2	1.00	14 47.4	54 10.0	+0.20
10.0	15 15.1	55 51.8	1.65	14 55.3	54 39.0	0.85	14 48.4	54 13.5	0.40
10.5	15 9.9	55 32.6	1.53	14 52.7	54 29.7	0.69	14 50.0	54 19.5	0.60
11.0	15 5.1	55 15.0	1.38	14 50.8	54 22.5	0.50	14 52.2	54 27.8	0.80
11.5	15 0.8	54 59.4	1.22	14 49.5	54 17.6	0.31	14 55.2	54 38.6	1.00
12.0	14 57.1	54 45.8	1.04	14 48.8	54 15.1	-0.10	14 58.8	54 51.9	1.21
12.5	14 54.1	54 34.5	0.84	14 48.8	54 15.1	+0.10	15 3.1	55 7.6	1.40
13.0	14 51.7	54 25.7	0.63	14 49.4	54 17.6	0.32	15 8.0	55 25.6	1.50
13.5	14 49.9	54 19.4	0.42	14 50.8	54 22.7	0.53	15 13.5	55 45.8	1.77
14.0	14 48.9	54 15.6	-0.20	14 52.9	54 30.3	0.74	15 19.5	56 8.0	1.92
14.5	14 48.6	54 14.5	+0.02	14 55.7	54 40.5	0.95	15 26.0	56 31.9	2.05
15.0	14 49.0	54 16.0	0.23	14 59.1	54 53.0	1.14	15 32.9	56 57.2	2.15
15.5	14 50.1	54 20.0	0.44	15 3.1	55 7.9	1.33	15 40.1	57 23.5	2.21
16.0	14 51.9	54 26.5	0.64	15 7.8	55 24.9	1.50	15 47.4	57 50.3	2.23
16.5	14 54.3	54 35.3	0.82	15 12.9	55 43.8	1.64	15 54.6	58 17.0	2.20
17.0	14 57.2	54 46.2	0.99	15 18.5	56 4.2	1.76	16 1.8	58 43.1	2.12
17.5	15 0.7	54 59.1	1.15	15 24.4	56 26.0	1.85	16 8.5	59 8.0	2.00
18.0	15 4.7	55 13.7	1.27	15 30.6	56 48.6	1.90	16 14.8	59 31.2	1.82
18.5	15 9.1	55 29.7	1.38	15 36.9	57 11.7	1.92	16 20.5	59 51.8	1.60
19.0	15 13.7	55 46.8	1.46	15 43.1	57 34.8	1.91	16 25.3	60 9.6	1.34
19.5	15 18.7	56 4.8	1.52	15 49.3	57 57.5	1.85	16 29.2	60 23.9	1.03
20.0	15 23.7	56 23.4	1.55	15 55.3	58 19.2	1.75	16 32.0	60 34.4	0.70
20.5	15 28.8	56 42.1	1.56	16 0.8	58 39.6	1.62	16 33.8	60 40.8	0.37
21.0	15 33.9	57 0.8	1.54	16 5.9	58 58.2	1.45	16 34.5	60 43.2	+0.03
21.5	15 38.8	57 19.0	1.48	16 10.3	59 14.5	1.26	16 34.0	60 41.5	-0.30
22.0	15 43.6	57 36.4	1.41	16 14.1	59 28.4	1.04	16 32.5	60 36.0	0.60
22.5	15 48.1	57 52.9	1.32	16 17.1	59 39.5	0.80	16 30.0	60 27.0	0.80
23.0	15 52.2	58 8.2	1.22	16 19.3	59 47.7	0.56	16 26.7	60 14.7	1.13
23.5	15 56.0	58 22.1	1.10	16 20.8	59 53.0	0.32	16 22.6	59 59.8	1.34
24.0	15 59.4	58 34.5	0.97	16 21.4	59 55.3	+0.08	16 18.0	59 42.6	1.50
24.5	16 2.3	58 45.3	0.83	16 21.3	59 54.9	-0.14	16 12.8	59 23.7	1.62
25.0	16 4.8	58 54.4	0.70	16 20.5	59 51.9	0.35	16 7.4	59 3.7	1.70
25.5	16 6.9	59 2.0	0.57	16 19.0	59 46.6	0.53	16 1.7	58 43.0	1.74
26.0	16 8.5	59 8.0	0.43	16 17.0	59 39.2	0.60	15 56.0	58 22.0	1.75
26.5	16 9.7	59 12.4	0.31	16 14.5	59 30.0	0.83	15 50.3	58 1.0	1.74
27.0	16 10.5	59 15.4	0.20	16 11.6	59 19.3	0.94	15 44.6	57 40.3	1.70
27.5	16 11.0	59 17.1	+0.08	16 8.4	59 7.5	1.02	15 39.2	57 20.1	1.65
28.0	16 11.1	59 17.4	-0.02	16 4.9	58 54.7	1.10	15 33.8	57 0.6	1.59
28.5	16 10.8	59 16.5	0.12	16 1.2	58 41.2	1.15	15 28.8	56 42.0	1.52
29.0	16 10.3	59 14.4	0.22	15 57.4	58 27.2	1.18	15 23.9	56 24.2	1.44
29.5	16 9.4	59 11.1	0.32	15 53.5	58 12.8	1.21	15 19.3	56 7.4	1.36
30.0	16 8.2	59 6.7	0.42	15 49.5	57 58.1	1.23	15 15.0	55 51.5	1.28
30.5	16 6.6	59 1.1	0.52	15 45.5	57 43.2	1.25	15 11.0	55 36.7	1.20
31.0	16 4.8	58 54.3	-0.62	15 41.4	57 28.2	-1.25	15 7.2	55 22.8	-1.11

FOR WASHINGTON MEAN NOON AND MIDNIGHT.

Date.	JULY.			AUGUST.			SEPTEMBER.		
	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Semi-Diameter.	Horizontal Parallax.	Hourly Diff.
d									
1.0	15 11.0	55 36.7	-1.19	14 48.0	54 12.2	-0.50	14 46.7	54 7.6	+0.36
1.5	15 7.2	55 22.9	1.11	14 46.5	54 6.8	0.38	14 48.1	54 12.6	0.46
2.0	15 3.7	55 10.0	1.03	14 45.4	54 2.9	0.27	14 49.8	54 18.8	0.56
2.5	15 0.5	54 58.2	0.94	14 44.7	54 0.2	0.17	14 51.8	54 26.1	0.66
3.0	14 57.6	54 47.3	0.86	14 44.3	53 58.8	-0.06	14 54.1	54 34.6	0.76
3.5	14 54.9	54 37.5	0.77	14 44.3	53 58.7	+0.05	14 56.7	54 44.3	0.85
4.0	14 52.5	54 28.8	0.69	14 44.7	54 0.0	0.16	14 59.7	54 55.2	0.95
4.5	14 50.4	54 21.2	0.59	14 45.4	54 2.6	0.28	15 3.0	55 7.3	1.05
5.0	14 48.7	54 14.7	0.49	14 46.5	54 6.6	0.40	15 6.6	55 20.6	1.16
5.5	14 47.2	54 9.4	0.38	14 48.0	54 12.2	0.53	15 10.6	55 35.1	1.26
6.0	14 46.1	54 5.4	0.27	14 49.9	54 19.3	0.67	15 14.9	55 50.9	1.37
6.5	14 45.4	54 2.8	0.14	14 52.3	54 28.2	0.81	15 19.5	56 8.0	1.48
7.0	14 45.2	54 1.8	-0.01	14 55.2	54 38.8	0.96	15 24.5	56 26.4	1.58
7.5	14 45.4	54 2.6	+0.14	14 58.6	54 51.2	1.11	15 29.9	56 46.0	1.68
8.0	14 46.1	54 5.1	0.29	15 2.5	55 5.4	1.27	15 35.5	57 6.7	1.77
8.5	14 47.3	54 9.5	0.45	15 6.9	55 21.5	1.42	15 41.4	57 28.4	1.84
9.0	14 49.0	54 16.0	0.63	15 11.8	55 39.6	1.58	15 47.5	57 50.8	1.89
9.5	14 51.4	54 24.6	0.81	15 17.2	55 59.5	1.73	15 53.8	58 13.8	1.92
10.0	14 54.3	54 35.4	0.99	15 23.1	56 21.2	1.87	16 0.1	58 37.1	1.93
10.5	14 57.9	54 48.5	1.18	15 29.5	56 44.5	2.00	16 6.4	59 0.2	1.90
11.0	15 2.0	55 3.9	1.37	15 36.2	57 9.3	2.11	16 12.5	59 22.7	1.83
11.5	15 6.8	55 21.5	1.56	15 43.3	57 35.3	2.20	16 18.4	59 44.1	1.71
12.0	15 12.2	55 41.3	1.73	15 50.6	58 2.2	2.26	16 23.7	60 3.8	1.54
12.5	15 18.2	56 3.2	1.90	15 58.1	58 29.7	2.28	16 28.5	60 21.3	1.33
13.0	15 24.7	56 27.0	2.06	16 5.6	58 57.1	2.25	16 32.5	60 35.9	1.08
13.5	15 31.6	56 52.5	2.19	16 12.8	59 23.9	2.18	16 35.5	60 47.1	0.77
14.0	15 39.0	57 19.4	2.29	16 19.8	59 49.6	2.04	16 37.5	60 54.5	0.44
14.5	15 46.6	57 47.4	2.35	16 26.3	60 13.2	1.85	16 38.4	60 57.8	+0.09
15.0	15 54.3	58 15.8	2.37	16 32.0	60 34.3	1.61	16 38.1	60 56.6	-0.28
15.5	16 2.1	58 44.3	2.34	16 36.9	60 52.1	1.32	16 36.5	60 50.9	0.65
16.0	16 9.6	59 12.1	2.26	16 40.6	61 6.0	0.98	16 33.8	60 40.9	1.00
16.5	16 16.9	59 38.7	2.13	16 43.2	61 15.5	0.60	16 29.9	60 26.7	1.33
17.0	16 23.6	60 3.3	1.93	16 44.5	61 20.3	+0.19	16 25.1	60 8.8	1.63
17.5	16 29.5	60 25.1	1.68	16 44.5	61 20.1	-0.23	16 19.3	59 47.6	1.87
18.0	16 34.6	60 43.6	1.38	16 43.1	61 14.9	0.63	16 12.8	59 23.7	2.06
18.5	16 38.5	60 58.2	1.03	16 40.3	61 4.8	1.02	16 5.8	58 57.9	2.21
19.0	16 41.3	61 8.4	0.65	16 36.4	60 50.3	1.37	15 58.4	58 30.7	2.29
19.5	16 42.8	61 14.0	+0.26	16 31.4	60 31.8	1.68	15 50.8	58 2.8	2.32
20.0	16 43.0	61 14.7	-0.14	16 25.4	60 9.9	1.93	15 43.2	57 34.9	2.30
20.5	16 41.9	61 10.5	0.53	16 18.7	59 45.2	2.13	15 35.7	57 7.5	2.23
21.0	16 39.5	61 1.8	0.90	16 11.4	59 18.6	2.27	15 28.5	56 41.1	2.14
21.5	16 36.0	60 48.8	1.23	16 3.8	58 50.6	2.35	15 21.7	56 16.1	2.00
22.0	16 31.4	60 32.1	1.52	15 56.0	58 22.1	2.37	15 15.4	55 52.9	1.85
22.5	16 26.0	60 12.2	1.76	15 48.2	57 53.5	2.35	15 9.7	55 31.8	1.67
23.0	16 19.9	59 49.7	1.95	15 40.6	57 25.5	2.28	15 4.5	55 12.9	1.48
23.5	16 13.2	59 25.3	2.07	15 33.3	56 58.6	2.19	15 0.0	54 56.2	1.28
24.0	16 6.3	59 0.0	2.15	15 26.3	56 33.0	2.06	14 56.1	54 42.0	1.08
24.5	15 59.2	58 33.6	2.18	15 19.8	56 9.1	1.91	14 52.9	54 30.2	0.88
25.0	15 52.0	58 7.4	2.16	15 13.8	55 47.1	1.75	14 50.3	54 20.8	0.68
25.5	15 45.0	57 41.6	2.11	15 7.9	55 27.2	1.57	14 48.4	54 13.8	0.48
26.0	15 38.2	57 16.6	2.04	15 3.6	55 9.4	1.39	14 47.2	54 9.2	0.29
26.5	15 31.7	56 52.7	1.93	14 59.3	54 53.7	1.22	14 46.5	54 6.7	-0.12
27.0	15 25.5	56 30.0	1.82	14 55.6	54 40.1	1.04	14 46.4	54 6.4	+0.05
27.5	15 19.8	56 8.9	1.69	14 52.5	54 28.7	0.87	14 46.8	54 8.0	0.21
28.0	15 14.5	55 49.4	1.56	14 49.9	54 19.2	0.70	14 47.8	54 11.5	0.36
28.5	15 9.6	55 31.5	1.42	14 47.9	54 11.8	0.53	14 49.2	54 16.6	0.49
29.0	15 5.2	55 15.3	1.28	14 46.4	54 6.4	0.38	14 51.0	54 23.3	0.61
29.5	15 1.2	55 0.8	1.14	14 45.4	54 2.7	0.24	14 53.1	54 31.2	0.71
30.0	14 57.7	54 48.0	1.00	14 44.9	54 0.7	-0.10	14 55.6	54 40.3	0.80
30.5	14 54.6	54 36.7	0.87	14 44.8	54 0.3	+0.03	14 58.4	54 50.5	0.88
31.0	14 52.0	54 27.1	0.74	14 45.0	54 1.4	0.15	15 1.4	55 1.6	0.95
31.5	14 49.8	54 18.9	-0.62	14 45.7	54 3.8	+0.26	15 4.6	55 13.4	+1.01

FOR WASHINGTON MEAN NOON AND MIDNIGHT.									
Date.	OCTOBER.			NOVEMBER.			DECEMBER.		
	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.
1.0	15 1.4	55 1.6	+0.95	15 35.9	57 8.2	+1.26	16 6.3	58 59.7	+0.94
1.5	15 4.6	55 13.4	1.01	15 40.0	57 23.0	1.21	16 9.0	59 9.9	0.75
2.0	15 8.0	55 25.9	1.07	15 43.8	57 37.2	1.15	16 11.2	59 17.9	0.56
2.5	15 11.6	55 39.0	1.12	15 47.5	57 50.6	1.08	16 12.7	59 23.5	0.37
3.0	15 15.3	55 52.6	1.16	15 50.9	58 3.2	1.01	16 13.7	59 26.9	0.20
3.5	15 19.2	56 6.7	1.19	15 54.0	58 14.8	0.94	16 14.0	59 28.2	+0.03
4.0	15 23.1	56 21.2	1.23	15 57.0	58 25.6	0.86	16 13.8	59 27.6	-0.12
4.5	15 27.2	56 36.2	1.26	15 59.7	58 35.5	0.79	16 13.2	59 25.4	0.25
5.0	15 31.4	56 51.5	1.29	16 2.1	58 44.6	0.72	16 12.2	59 21.5	0.37
5.5	15 35.6	57 7.1	1.31	16 4.4	58 52.8	0.64	16 10.8	59 16.4	0.47
6.0	15 40.0	57 23.1	1.34	16 6.4	59 0.1	0.57	16 9.1	59 10.1	0.56
6.5	15 44.4	57 39.3	1.36	16 8.1	59 6.4	0.49	16 7.1	59 2.8	0.64
7.0	15 48.9	57 55.8	1.37	16 9.6	59 11.8	0.40	16 4.9	58 54.6	0.71
7.5	15 53.4	58 12.3	1.37	16 10.7	59 16.2	0.30	16 2.4	58 45.7	0.78
8.0	15 57.9	58 28.8	1.36	16 11.6	59 19.3	0.20	15 59.8	58 36.0	0.84
8.5	16 2.3	58 45.1	1.33	16 12.1	59 21.2	+0.09	15 57.0	58 25.6	0.90
9.0	16 6.6	59 1.0	1.28	16 12.2	59 21.6	-0.04	15 54.0	58 14.5	0.95
9.5	16 10.7	59 16.0	1.21	16 11.9	59 20.4	0.18	15 50.8	58 2.8	1.01
10.0	16 14.5	59 30.0	1.11	16 11.1	59 17.4	0.33	15 47.4	57 50.4	1.06
10.5	16 17.9	59 42.6	0.97	16 9.8	59 12.5	0.49	15 43.8	57 37.3	1.11
11.0	16 20.9	59 53.5	0.81	16 7.9	59 5.6	0.65	15 40.1	57 23.6	1.16
11.5	16 23.3	60 2.1	0.62	16 5.5	58 56.8	0.82	15 36.2	57 9.3	1.21
12.0	16 24.9	60 8.3	0.39	16 2.5	58 45.8	0.99	15 32.2	56 54.5	1.25
12.5	16 25.8	60 11.6	+0.14	15 59.0	58 32.9	1.15	15 28.0	56 39.2	1.28
13.0	16 25.9	60 11.7	-0.13	15 55.0	58 18.2	1.30	15 23.8	56 23.7	1.29
13.5	16 25.0	60 8.5	0.41	15 50.5	58 1.8	1.42	15 19.5	56 8.1	1.29
14.0	16 23.2	60 1.8	0.70	15 45.7	57 44.0	1.53	15 15.3	55 52.6	1.28
14.5	16 20.4	59 51.7	0.98	15 40.5	57 25.1	1.61	15 11.2	55 37.3	1.24
15.0	16 16.8	59 38.3	1.23	15 35.1	57 5.4	1.65	15 7.1	55 22.6	1.19
15.5	16 12.3	59 22.0	1.46	15 29.7	56 45.4	1.67	15 3.3	55 8.6	1.12
16.0	16 7.2	59 3.1	1.66	15 24.2	56 25.3	1.66	14 59.8	54 55.5	1.04
16.5	16 1.5	58 42.1	1.82	15 18.8	56 5.5	1.61	14 56.5	54 43.6	0.92
17.0	15 55.3	58 19.4	1.94	15 13.7	55 46.5	1.54	14 53.7	54 33.2	0.79
17.5	15 48.8	57 55.4	2.02	15 8.8	55 28.5	1.44	14 51.3	54 24.5	0.64
18.0	15 42.0	57 30.8	2.05	15 4.2	55 11.9	1.31	14 49.5	54 17.7	0.48
18.5	15 35.3	57 6.0	2.04	15 0.2	54 57.0	1.16	14 48.2	54 13.0	0.29
19.0	15 28.7	56 41.7	1.99	14 56.7	54 44.1	0.98	14 47.5	54 10.5	-0.10
19.5	15 22.3	56 18.2	1.90	14 53.7	54 33.3	0.80	14 47.5	54 10.4	+0.10
20.0	15 16.2	55 55.9	1.78	14 51.4	54 24.9	0.60	14 48.1	54 12.8	0.30
20.5	15 10.6	55 35.3	1.63	14 49.8	54 18.9	0.39	14 49.5	54 17.8	0.52
21.0	15 5.5	55 16.7	1.46	14 48.9	54 15.6	-0.17	14 51.5	54 25.3	0.74
21.5	15 1.0	55 0.1	1.28	14 48.7	54 14.9	+0.05	14 54.3	54 35.5	0.96
22.0	14 57.2	54 45.9	1.08	14 49.2	54 16.8	0.26	14 57.8	54 48.3	1.17
22.5	14 54.0	54 34.2	0.87	14 50.5	54 21.3	0.48	15 2.0	55 3.5	1.37
23.0	14 51.5	54 25.0	0.66	14 52.3	54 28.2	0.69	15 6.7	55 21.1	1.56
23.5	14 49.6	54 18.4	0.44	14 55.0	54 37.9	0.89	15 12.1	55 40.8	1.73
24.0	14 48.6	54 14.4	0.23	14 58.2	54 49.7	1.08	15 18.0	56 2.6	1.88
24.5	14 48.2	54 12.9	-0.02	15 2.0	55 3.8	1.25	15 24.4	56 25.9	2.00
25.0	14 48.5	54 14.0	+0.18	15 6.4	55 19.8	1.40	15 31.1	56 50.6	2.09
25.5	14 49.4	54 17.3	0.37	15 11.2	55 37.4	1.53	15 38.1	57 16.1	2.13
26.0	14 50.9	54 22.9	0.55	15 16.4	55 56.4	1.62	15 45.1	57 41.8	2.14
26.5	14 53.0	54 30.6	0.72	15 21.8	56 16.5	1.69	15 52.1	58 7.5	2.10
27.0	14 55.6	54 40.2	0.87	15 27.5	56 37.2	1.73	15 58.8	58 32.3	2.01
27.5	14 58.7	54 51.5	0.99	15 33.2	56 58.1	1.73	16 5.2	58 55.8	1.87
28.0	15 2.1	55 4.2	1.10	15 38.8	57 18.9	1.70	16 11.1	59 17.4	1.69
28.5	15 5.9	55 18.1	1.20	15 44.3	57 39.2	1.64	16 16.3	59 36.6	1.47
29.0	15 9.9	55 32.9	1.27	15 49.6	57 58.5	1.55	16 20.7	59 52.9	1.21
29.5	15 14.2	55 48.5	1.31	15 54.5	58 16.5	1.43	16 24.3	60 5.9	0.93
30.0	15 18.6	56 4.5	1.34	15 58.9	58 32.8	1.28	16 29.9	60 15.4	0.63
30.5	15 23.0	56 20.6	1.35	16 2.9	58 47.3	1.12	16 28.5	60 21.2	0.33
31.0	15 27.4	56 36.8	1.33	16 6.3	58 59.7	0.94	16 29.0	60 23.3	+0.02
31.5	15 31.7	56 52.7	+1.30	16 9.0	59 9.9	+0.75	16 28.6	60 21.8	-0.27

WASHINGTON MEAN TIME.

PHASES.

Month.	First Quarter.	Full Moon.	Last Quarter.	New Moon.	First Quarter.	Full Moon.
	d h m	d h m	d h m	d h m		
January	2 10 54.3	9 5 44.6	15 23 55.5	24 2 10.2		
February	1 1 7.6	7 16 27.2	14 16 8.5	22 21 12.4	d h m	
March	1 11 40.7	8 3 14.0	15 10 20.5	23 13 50.9	30 19 17.4	
April		6 14 8.6	14 5 26.5	22 3 11.6	29 1 9.6	
May		6 1 28.8	14 0 6.9	21 13 27.8	28 6 33.7	
June		4 13 46.9	12 17 5.4	19 21 37.0	26 12 42.4	
July		4 3 31.2	12 7 32.0	19 4 48.1	25 20 43.3	
August		2 18 43.6	10 19 20.1	17 12 3.2	24 7 38.6	
September		1 10 49.2	9 4 56.1	15 20 11.2	22 23 13.6	d h m
October		1 2 49.9	8 13 5.5	15 5 53.1	22 16 33.9	30 17 57.1
November			6 20 38.7	13 17 47.4	21 13 38.1	29 7 52.3
December			6 4 25.8	13 8 25.1	21 11 19.7	28 20 39.4

APOGEE, PERIGEE, AND GREATEST LIBRATION.

Month.	Perigee.	Apogee.	Perigee.	GREATEST LIBRATION.		
	d h	d h	d h	d h m	d h m	d h m
January	9 9.3	23 2.5		3 9 7 N.E.	15 10 56 N.W.	31 15 8 N.E.
February	6 21.9	19 10.4		12 19 6 N.W.	28 8 59 N.E.	
March	6 6.1	18 3.4	d h	12 0 27 N.W.	25 21 51 N.E.	
April	2 22.9	14 23.1	28 9.3	8 21 8 N.W.	21 9 39 N.E.	
May		12 18.2	24 16.2	6 1 29 N.W.	18 19 30 N.E.	
June		9 11.7	21 13.0	1 9 2 N.W.	15 17 18 N.E.	28 6 34 N.W.
July		7 1.1	19 19.7	13 20 49 N.E.	26 2 5 N.W.	
August		3 6.4	17 5.5	11 1 46 N.E.	23 5 47 N.W.	
August		30 9.7				
September	14 15.1	26 20.0		8 2 36 N.E.	20 10 44 N.W.	
October	12 18.5	24 13.1		5 10 32 N.E.	18 12 27 N.W.	31 14 54 N.E.
November	8 21.2	21 9.4			15 4 18 N.W.	27 12 45 N.E.
December	3 14.2	19 6.4	31 1.0		11 22 1 N.W.	25 7 28 N.E.

MOON'S EQUATOR.

The moon's libration in latitude and longitude, at any time, may be found by means of the following formulas and tables.

I = the inclination to the ecliptic of the moon's equator = $1^{\circ} 28'.8$,

Ω = mean longitude of the moon's ascending node (see page 250),

= mean longitude of the descending node of the moon's equator.

C = the angle at the centre of the moon's disc made by a meridian of the moon with the circle of declination, reckoned from north to east on the apparent disc.

i , Δ , Ω' , and ζ are defined on the next page, where their values for the year are given.

λ , β , α' , and δ' are respectively the apparent longitude, latitude, right ascension, and declination of the moon affected with parallax.

λ' = the selenocentric longitude of the earth, reckoned on the moon's equator from its descending node.

$$\left. \begin{aligned} \Delta \lambda &= -0'.57 \sin 2(\Omega - \lambda) \\ \alpha &= \sin I \cos(\Omega - \lambda) \\ \tan B &= \tan I \sin(\Omega - \lambda) \\ \lambda' &= \lambda + \Delta \lambda + \alpha b \end{aligned} \right\} \text{See table, p. 6 of the Appendix.}$$

The libration in latitude = $b = B - \beta$,

" " longitude = $l = \lambda' - \zeta$.

$$\sin C = \sin i \frac{\cos(\lambda' + \Delta - \Omega)}{\cos \delta'} = -\sin i \frac{\cos(\alpha' - \Omega')}{\cos b}.$$

WASHINGTON MEAN TIME.

MOON'S EQUATOR.				☾ Moon's Mean Longitude.	Mean Solar Days.	Motion of ☾.
Mean Noon.	i Inclination to the Earth's Equator.	Δ Ascending Node on Earth's Equator to Ascending Node on Ecliptic.	Ω' Ascending Node on Earth's Equator.			
Jan. 1	24° 50.3	339° 15.0	358° 41.0	0° 42.5	0.1	1° 19.06
11	24 50.0	338 44.9	358 39.2	132 28.4	0.2	2 38.12
21	24 49.7	338 14.8	358 37.4	264 14.2	0.3	3 57.18
31	24 49.3	337 44.6	358 35.5	36 0.0	0.4	5 16.23
Feb. 10	24 49.0	337 14.5	358 33.7	167 45.9	0.5	6 35.29
20	24 48.7	336 44.4	358 31.9	299 31.7	0.6	7 54.35
March 1	24 48.4	336 14.2	358 30.1	71 17.6	0.7	9 13.41
11	24 48.0	335 44.1	358 28.3	203 3.4	0.8	10 32.47
21	24 47.7	335 13.9	358 26.6	334 49.2	0.9	11 51.53
31	24 47.3	334 43.8	358 24.8	106 35.1		
April 10	24 47.0	334 13.6	358 23.0	238 20.9	1.0	13 10.58
20	24 46.6	333 43.4	358 21.3	10 6.8	2.0	26 21.17
30	24 46.2	333 13.2	358 19.5	141 52.6	3.0	39 31.75
May 10	24 45.9	332 43.1	358 17.8	273 38.4	4.0	52 42.33
20	24 45.5	332 12.9	358 16.0	45 24.3	5.0	65 52.92
30	24 45.1	331 42.7	358 14.3	177 10.1	6.0	79 3.50
June 9	24 44.7	331 12.5	358 12.6	308 55.9	7.0	92 14.09
19	24 44.3	330 42.2	358 10.9	80 41.8	8.0	105 24.67
29	24 43.8	330 12.0	358 9.2	212 27.6	9.0	118 35.25
July 9	24 43.4	329 41.8	358 7.5	344 13.5	10.0	131 45.84
19	24 43.0	329 11.6	358 5.8	115 59.3	11	0 32.94
29	24 42.6	328 41.4	358 4.1	247 45.1	2	1 5.88
Aug. 8	24 42.1	328 11.2	358 2.5	19 31.0	3	1 38.82
18	24 41.7	327 41.0	358 0.8	151 16.8	4	2 11.76
28	24 41.2	327 10.8	357 59.2	283 2.6	5	2 44.70
Sept. 7	24 40.8	326 40.6	357 57.5	54 48.5	6	3 17.64
17	24 40.3	326 10.3	357 55.9	186 34.3	7	3 50.59
27	24 39.9	325 40.0	357 54.3	318 20.2	8	4 23.53
Oct. 7	24 39.4	325 9.6	357 52.6	90 6.0	9	4 56.47
17	24 39.0	324 39.8	357 51.0	221 51.8	10	5 29.41
27	24 38.5	324 9.0	357 49.4	353 37.7	11	6 2.35
Nov. 6	24 38.0	323 38.7	357 47.8	125 23.5	12	6 35.29
16	24 37.5	323 8.3	357 46.2	257 9.4	13	7 8.23
26	24 37.0	322 38.0	357 44.7	28 55.2	14	7 41.17
Dec. 6	24 36.5	322 7.6	357 43.1	160 41.0	15	8 14.11
16	24 36.0	321 37.2	357 41.5	292 26.9	16	8 47.05
26	24 35.5	321 6.8	357 39.9	64 12.7	17	9 19.99
36	24 35.0	320 36.4	357 38.4	195 58.5	18	9 52.93

FOR WASHINGTON MEAN NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of α .		Log of δ .		Mean Solar Time of Meridian Transit.
	At Mean Noon.	At Transit.	At Mean Noon.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
	^h ^m ^s	^m ^s	[°] ['] ["]	[°] ['] ["]					^d ^h ^m
Jan. 1	17 49 40.92	49 26.37	-23 56 23.6	56 5.1	+9.44084	-9.5417	+3.80	+5.24	0 23 7.0
2	17 56 19.58	56 5.63	24 4 8.7	3 53.6	9.44360	9.4740	3.77	5.24	1 23 9.7
3	18 3 0.70	2 47.43	24 10 40.8	10 29.0	9.44620	9.3919	3.74	5.25	2 23 12.5
4	18 9 44.16	9 31.59	24 15 58.2	15 49.4	9.44865	9.2879	3.72	5.26	3 23 15.3
5	18 16 29.83	16 17.99	24 19 59.3	19 53.2	9.45094	9.1478	3.70	5.27	4 23 18.1
6	18 23 17.58	23 6.49	24 22 42.5	22 39.1	9.45310	8.9347	3.68	5.28	5 23 20.9
7	18 30 7.29	20 56.98	24 24 6.7	24 5.6	9.45512	-8.4895	3.64	5.28	6 23 23.8
8	18 36 58.85	36 49.33	24 24 10.9	24 11.7	9.45700	+8.4015	3.61	5.29	7 23 26.7
9	18 43 52.13	43 43.42	24 22 53.7	22 56.2	9.45877	8.9144	3.59	5.30	8 23 29.7
10	18 50 47.04	50 39.15	24 20 14.1	20 17.9	9.46041	9.1453	3.56	5.30	9 23 32.7
11	18 57 43.47	57 36.44	24 16 10.8	16 15.6	9.46193	9.2970	3.53	5.31	10 23 35.7
12	19 4 41.30	4 35.12	24 10 42.9	10 48.4	9.46334	9.4103	3.49	5.31	11 23 38.7
13	19 11 40.43	11 35.11	24 3 49.5	3 55.3	9.46462	9.5011	3.46	5.32	12 23 41.8
14	19 18 40.74	18 36.31	23 55 29.6	55 35.3	9.46580	9.5769	3.42	5.32	13 23 44.8
15	19 25 42.14	25 38.60	23 45 42.3	45 47.6	9.46686	9.6418	3.37	5.33	14 23 47.9
16	19 32 44.52	32 41.88	23 34 26.8	34 31.3	9.46780	9.6990	3.31	5.33	15 23 51.0
17	19 39 47.75	39 46.03	23 21 42.2	21 45.5	9.46863	9.7498	3.27	5.33	16 23 54.1
18	19 46 51.75	46 50.95	23 7 27.8	7 29.5	9.46936	9.7957	3.20	5.34	17 23 57.2
19	19 53 56.41	53 56.53	22 51 42.9	51 42.6	9.46999	9.8374	3.13	5.34	19 0 0.4
20	20 1 1.63	1 2.68	22 34 27.0	34 24.3	9.47050	9.8757	3.01	5.34	20 0 3.6
21	20 8 7.28	8 9.27	22 15 39.6	15 34.0	9.47086	9.9111	2.83	5.35	21 0 6.7
22	20 15 13.21	15 16.14	21 55 19.8	55 11.1	9.47108	9.9440	2.64	5.35	22 0 9.9
23	20 22 19.31	22 23.17	21 33 27.4	33 15.1	9.47120	9.9749	+2.15	5.35	23 0 13.0
24	20 29 25.47	29 30.27	21 10 2.0	9 45.7	9.47120	0.0036	-2.23	5.35	24 0 16.2
25	20 36 31.56	36 37.30	20 45 3.5	44 42.7	9.47108	0.0306	2.64	5.35	25 0 19.4
26	20 43 37.47	43 44.14	20 18 32.0	18 6.3	9.47080	0.0560	2.96	5.35	26 0 22.6
27	20 50 43.00	50 55.59	19 50 27.3	49 56.4	9.47033	0.0800	3.11	5.35	27 0 25.7
28	20 57 47.99	57 56.50	19 20 49.8	20 13.3	9.46968	0.1025	3.24	5.35	28 0 28.8
29	21 4 52.26	5 1.68	18 49 39.9	48 57.3	9.46883	0.1240	3.36	5.34	29 0 32.0
30	21 11 55.58	12 5.88	18 16 58.2	16 9.3	9.46775	0.1442	3.44	5.34	30 0 35.1
31	21 18 57.74	19 8.92	17 42 45.8	41 50.2	9.46643	0.1633	3.54	5.33	31 0 38.2
Feb. 1	21 25 58.46	26 10.50	17 7 4.1	6 1.5	9.46478	0.1812	3.63	5.32	1 0 41.2
2	21 32 57.41	33 10.27	16 20 55.0	28 45.0	9.46279	0.1981	3.70	5.31	2 0 44.3
3	21 39 54.27	40 7.94	15 51 20.4	50 2.9	9.46038	0.2139	3.79	5.30	3 0 47.3
4	21 46 48.58	47 3.00	15 11 23.2	9 58.1	9.45747	0.2285	3.86	5.28	4 0 50.3
5	21 53 39.89	53 55.03	14 30 7.1	28 34.1	9.45402	0.2421	3.93	5.25	5 0 53.2
6	22 0 27.62	0 43.42	13 47 36.1	45 55.2	9.44989	0.2545	4.01	5.22	6 0 56.1
7	22 7 11.13	7 27.50	13 3 55.4	2 6.9	9.44495	0.2655	4.08	5.18	7 0 58.8
8	22 13 49.65	14 6.56	12 19 11.6	17 15.5	9.43906	0.2751	4.15	5.13	8 1 1.5
9	22 20 22.33	20 39.68	11 33 31.8	31 28.5	9.43208	0.2833	4.22	5.06	9 1 4.2
10	22 26 48.17	27 5.85	10 47 4.4	44 54.5	9.42377	0.2900	4.29	4.95	10 1 6.7
11	22 33 6.02	33 23.91	9 59 59.7	57 43.7	9.41386	0.2948	4.35	4.79	11 1 9.0
12	22 39 14.59	39 32.55	9 12 29.7	10 8.3	9.40210	0.2977	4.41	+4.46	12 1 11.2
13	22 45 12.45	45 30.32	8 24 47.6	22 22.0	9.38818	0.2986	4.47	-3.84	13 1 13.1
14	22 50 58.02	51 15.65	7 37 8.4	34 39.8	9.37163	0.2969	4.53	4.67	14 1 15.0
15	22 56 29.51	56 46.72	6 49 49.0	47 18.9	9.35199	0.2924	4.58	4.97	15 1 16.6
16	23 1 45.06	2 1.64	6 3 7.9	0 37.8	9.32868	0.2850	4.64	5.14	16 1 18.0
17	23 6 42.64	6 58.39	5 17 25.0	14 56.7	9.30090	0.2740	4.68	5.28	17 1 18.9
18	23 11 20.17	11 34.87	4 33 1.9	30 37.6	9.26781	0.2593	4.73	5.39	18 1 19.5
19	23 15 35.50	15 48.96	3 50 20.9	48 2.4	9.22815	0.2399	4.77	5.48	19 1 19.8
20	23 19 26.47	19 38.51	3 9 45.2	7 34.4	9.18026	0.2155	4.80	5.55	20 1 19.8
21	23 22 50.99	23 1.43	2 31 38.4	29 37.5	9.12183	0.1849	4.83	5.62	21 1 19.1
22	23 25 47.11	25 55.82	1 56 24.3	54 35.0	9.04924	0.1470	4.86	5.67	22 1 18.1
23	23 28 13.02	28 19.91	1 24 25.6	22 49.5	8.95639	0.1001	4.88	5.72	23 1 16.6
24	23 30 7.21	30 12.24	0 56 4.0	54 42.3	8.83232	0.0419	4.90	5.76	24 1 14.5
25	23 31 28.51	31 31.70	0 31 39.9	30 33.3	8.65150	9.9685	4.91	5.79	25 1 11.9
26	23 32 16.13	32 17.55	-0 11 31.0	10 39.9	+8.32807	9.8734	4.91	5.81	26 1 8.7
27	23 32 29.81	32 29.63	+0 4 7.3	4 43.1	-7.35485	9.7440	4.91	5.83	27 1 5.0
28	23 32 9.79	32 8.22	0 15 3.1	15 24.4	8.40565	9.5505	4.90	5.84	28 1 0.7
29	23 31 16.92	31 14.23	0 21 8.7	21 17.0	8.67939	+9.1824	4.88	5.85	29 0 55.9
30	23 29 52.78	29 49.28	0 22 21.2	22 18.4	8.83758	-8.7103	4.84	5.84	30 0 50.6
31	23 27 59.63	27 55.67	+0 18 42.8	18 31.5	-8.04468	-9.3997	-4.80	-5.83	31 0 44.8

FOR WASHINGTON MEAN NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of α .		Log of δ .		Mean Solar Time of Meridian Transit.
	At Mean Noon.	At Transit.	At Mean Noon.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
Mar. 1	h m s	m s	° ' "	° ' "					d h m
	23 29 52.78	29 49.28	+ 0 22 21.2	22 18.4	-8.83758	-8.7103	-4.84	-5.84	1 0 50.6
	23 27 59.63	27 55.67	0 18 42.8	18 31.5	8.94468	9.3997	4.80	5.83	2 0 44.8
	23 25 40.27	25 36.21	+ 0 10 21.9	10 4.7	9.02174	9.6464	4.74	5.81	3 0 38.5
	23 22 58.12	22 54.31	- 0 2 27.4	2 47.3	9.07758	9.7946	4.65	5.77	4 0 31.9
	23 19 57.39	19 54.12	0 19 24.9	19 44.5	9.11715	9.8960	4.53	5.73	5 0 25.0
	23 16 42.49	16 40.01	0 40 4.7	40 21.3	9.14353	9.9690	4.35	5.66	6 0 17.8
	23 13 18.20	13 16.69	1 3 55.7	4 6.7	9.15838	0.0221	-4.04	5.57	7 0 10.5
	23 9 49.35	9 48.90	1 30 23.2	30 26.8	9.16222	0.0600	+2.81	5.46	8 0 3.1
	23 6 20.78	6 21.40	1 58 50.2	58 45.0	9.15736	0.0849	4.07	5.29	8 23 55.7
	23 2 57.08	2 58.69	2 28 38.4	28 23.8	9.14231	0.1007	4.34	5.01	9 23 48.4
	22 59 42.43	59 44.89	2 59 10.1	58 46.2	9.11771	0.1068	4.49	-4.28	10 23 41.3
	22 56 40.56	56 43.67	3 29 49.8	28 17.1	9.08315	0.1047	4.58	+4.78	11 23 34.3
	22 53 54.61	53 58.14	3 60 4.6	59 24.3	9.03776	0.0951	4.65	5.11	12 23 27.6
	22 51 27.15	51 30.86	4 20 25.5	28 39.1	8.98004	0.0785	4.69	5.27	13 23 21.3
	22 49 20.10	49 23.73	4 57 27.7	56 36.8	8.90737	0.0553	4.72	6.38	14 23 15.2
	22 47 34.84	47 38.15	5 23 50.8	22 57.1	8.81508	0.0257	4.74	5.44	15 23 9.5
	22 46 12.19	46 14.95	5 48 18.5	47 24.0	8.69066	9.9895	4.74	5.49	16 23 4.2
	22 44 12.64	45 14.68	6 10 38.4	9 44.6	8.52010	9.9465	4.74	5.51	17 22 59.3
	22 44 36.15	44 37.31	6 30 41.9	29 50.4	8.24097	9.8958	4.74	5.53	18 22 54.7
	22 44 22.32	44 22.48	6 48 22.9	47 35.1	-7.26896	9.8365	4.73	5.54	19 22 50.5
	22 44 30.62	44 20.67	7 3 37.7	2 54.7	+8.12426	9.7666	4.71	5.55	20 22 46.7
	22 45 0.41	44 58.30	7 16 25.4	15 48.2	8.44646	9.6833	4.69	5.55	21 22 43.3
	22 45 50.82	45 47.50	7 26 46.1	26 15.5	8.62261	9.5801	4.67	5.54	22 22 40.1
	22 47 0.85	46 56.32	7 34 41.2	34 17.9	8.74206	9.4471	4.65	5.54	23 22 37.4
	22 48 29.51	48 23.77	7 40 13.3	39 57.7	8.83124	9.2591	4.63	5.53	24 22 34.9
	22 50 15.78	50 8.86	7 43 25.2	43 17.5	8.90132	-8.9309	4.60	5.52	25 22 32.7
	22 52 18.63	52 10.55	7 44 20.2	44 20.7	8.95828	+7.0280	4.57	5.50	26 22 30.8
	22 54 37.08	54 27.91	7 43 2.3	43 11.0	8.90584	8.9975	4.55	5.49	27 22 29.1
	22 57 10.22	56 59.99	7 39 35.3	39 52.3	9.04614	9.2734	4.52	5.48	28 22 27.7
	22 59 57.07	59 45.87	7 34 3.1	34 28.3	9.08078	9.4367	4.49	5.46	29 22 26.7
	23 2 56.83	2 44.67	7 26 29.6	27 2.9	9.11099	9.5516	4.46	5.45	30 22 25.7
Apr. 1	23 6 8.67	5 55.63	7 16 58.7	17 39.9	9.13750	9.6398	4.43	5.44	0 22 24.9
	23 9 31.84	9 17.90	7 5 34.1	6 23.1	9.16094	9.7110	4.41	5.42	1 22 24.3
	23 13 5.64	12 51.05	6 52 19.6	53 16.0	9.18188	9.7702	4.38	5.41	2 22 23.9
	23 16 49.44	16 34.16	6 37 18.6	38 22.2	9.20074	9.8208	4.36	5.40	3 22 23.7
	23 20 42.68	20 26.78	6 20 34.1	21 44.5	9.21776	9.8650	4.32	5.38	4 22 23.6
	23 24 44.79	24 28.33	6 2 9.3	3 26.3	9.23326	9.9038	4.30	5.36	5 22 23.7
	23 28 55.31	28 38.35	5 42 7.5	43 30.7	9.24744	9.9382	4.28	5.35	6 22 23.9
	23 33 13.82	32 56.40	5 20 31.9	22 0.9	9.26056	9.9698	4.26	5.34	7 22 24.3
	23 37 39.94	37 22.12	4 57 25.0	58 59.5	9.27271	9.9975	4.24	5.33	8 22 24.8
	23 42 13.32	41 55.14	4 32 49.5	34 29.2	9.28398	0.0232	4.22	5.31	9 22 25.4
	23 46 53.67	46 35.18	4 6 48.0	8 32.4	9.29459	0.0467	4.21	5.30	10 22 26.1
	23 51 40.75	51 21.99	3 39 23.0	41 11.8	9.30458	0.0685	4.19	5.29	11 22 26.9
	23 56 34.33	56 15.35	3 10 36.9	12 29.7	9.31405	0.0886	4.18	5.28	12 22 27.9
	0 1 34.23	1 15.07	2 40 32.0	42 28.5	9.32309	0.1072	4.17	5.27	13 22 28.9
	0 6 40.31	6 21.01	2 9 10.4	11 10.0	9.33178	0.1247	4.16	5.26	14 22 30.1
	0 11 52.46	11 33.06	1 36 34.5	38 37.0	9.34017	0.1410	4.16	5.24	15 22 31.3
	0 17 10.63	16 51.17	1 2 46.4	4 51.4	9.34832	0.1563	4.15	5.23	16 22 32.7
	0 22 34.73	22 15.23	- 0 27 48.2	29 55.4	9.35629	0.1705	4.15	5.21	17 22 34.1
	0 28 4.78	27 45.29	+ 0 8 18.0	6 9.4	9.36412	0.1840	4.15	5.20	18 22 35.7
	0 33 40.79	33 21.35	0 45 30.1	43 20.2	9.37182	0.1966	4.15	5.18	19 22 37.3
	0 39 22.76	39 3.39	1 23 45.9	21 45.3	9.37947	0.2085	4.16	5.17	20 22 39.1
	0 45 10.84	44 51.57	2 3 3.3	0 52.3	9.38712	0.2196	4.17	5.15	21 22 40.9
	0 51 5.08	50 45.96	2 43 19.9	41 9.1	9.39476	0.2300	4.18	5.13	22 22 42.9
	0 57 5.63	56 46.69	3 24 33.4	22 23.2	9.40245	0.2398	4.19	5.12	23 22 45.0
	1 3 12.66	2 53.94	4 6 41.5	4 32.4	9.41018	0.2489	4.20	5.09	24 22 47.2
	1 9 26.28	9 7.81	4 49 41.5	47 34.0	9.41798	0.2574	4.21	5.07	25 22 49.4
	1 15 46.70	15 28.53	5 33 30.7	31 25.2	9.42588	0.2653	4.23	5.04	26 22 51.8
	1 22 14.19	21 56.37	6 18 5.9	16 3.0	9.43389	0.2725	4.24	5.01	27 22 54.4
	1 28 48.92	28 31.49	7 3 24.1	1 24.3	9.44201	0.2792	4.26	4.97	28 22 57.1
	1 35 31.18	35 14.18	7 49 21.5	47 25.3	9.45026	0.2851	4.27	4.93	29 22 59.9
	1 42 21.18	42 4.70	+ 8 35 54.2	34 2.3	+9.45861	+0.2901	+4.28	+4.87	30 23 2.6

FOR WASHINGTON MEAN NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of α .		Log of δ .		Mean Solar Time of Meridian Transit.
	At Mean Noon.	At Transit.	At Mean Noon.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
May	h m s	m s	+ ° ' "	34 ' "					d h m
1	1 42 21.18	42 4.70	+ 8 35 54.2	34 2.3	+0.45861	+0.2901	+4.28	+4.87	0 23 2.6
2	1 49 19.20	49 3.28	9 22 57.8	21 10.7	9.46706	0.2946	4.30	4.80	1 23 5.7
3	1 56 25.46	56 10.17	10 10 27.5	8 45.8	9.47558	0.2982	4.31	4.69	2 23 8.9
4	2 3 40.21	3 25.61	10 58 17.7	56 42.0	9.48417	0.3008	4.32	4.54	3 23 12.2
5	2 11 3.66	10 49.84	11 46 22.3	44 53.2	9.49279	0.3025	4.33	4.28	4 23 15.6
6	2 18 35.99	18 23.04	12 34 34.8	33 12.8	9.50139	0.3031	4.34	+2.38	5 23 19.2
7	2 26 17.34	26 5.35	13 22 47.4	21 33.0	9.50991	0.3025	4.34	-4.29	6 23 22.9
8	2 34 7.74	33 56.80	14 10 51.9	9 45.6	9.51829	0.3007	2.34	4.62	7 23 26.8
9	2 42 7.23	41 57.45	14 58 39.2	57 41.5	9.52649	0.2973	4.33	4.81	8 23 30.9
10	2 50 15.69	50 7.16	15 45 59.4	45 10.6	9.53437	0.2924	4.32	4.95	9 23 35.1
11	2 58 32.90	58 25.74	16 32 41.7	32 2.0	9.54191	0.2857	4.31	5.08	10 23 39.4
12	3 6 58.55	6 52.87	17 18 34.7	18 4.3	9.54896	0.2769	4.28	5.16	11 23 44.0
13	3 15 32.14	15 28.04	18 3 26.6	3 5.5	9.55546	0.2660	4.25	5.25	12 23 48.6
14	3 24 13.09	24 10.66	18 47 4.9	46 53.0	9.56128	0.2527	4.20	5.32	13 23 53.3
15	3 33 0.59	32 59.93	19 29 17.0	29 13.9	9.56634	0.2370	4.14	5.37	14 23 58.2
16	3 41 53.78	41 54.95	20 9 50.7	9 55.9	9.57055	0.2183	4.04	5.42	16 0 3.2
17	3 50 51.59	50 54.66	20 48 34.1	48 47.0	9.57384	0.1966	3.92	5.46	17 0 8.2
18	3 59 52.88	59 57.89	21 25 15.8	25 35.5	9.57614	0.1715	3.72	5.50	18 0 13.3
19	4 8 56.38	9 3.35	21 59 45.5	60 11.1	9.57739	0.1428	+3.33	5.53	19 0 18.4
20	4 18 0.79	18 9.70	22 31 54.3	32 24.7	9.57756	0.1101	-3.05	5.55	20 0 23.2
21	4 27 4.73	27 15.57	23 1 34.7	2 8.7	9.57665	0.0731	3.64	5.57	21 0 28.7
22	4 36 6.87	36 19.58	23 28 41.0	29 17.3	9.57466	0.0313	3.88	5.58	22 0 33.8
23	4 45 5.86	45 20.37	23 53 8.9	53 46.3	9.57159	0.9830	4.03	5.59	23 0 38.9
24	4 54 0.41	54 16.63	24 14 55.9	15 33.2	9.56750	0.9302	4.13	5.59	24 0 43.9
25	5 2 49.34	3 7.14	24 34 1.0	34 37.0	9.56239	0.8688	4.21	5.59	25 0 48.8
26	5 11 31.51	11 50.78	24 50 25.5	50 59.0	9.55634	0.7984	4.27	5.58	26 0 53.5
27	5 20 5.89	20 26.49	25 4 10.7	4 40.8	9.54936	0.7148	4.32	5.57	27 0 58.2
28	5 28 31.57	28 53.37	25 15 19.9	15 45.6	9.54150	0.6145	4.36	5.56	28 1 2.7
29	5 36 47.69	37 10.54	25 23 57.5	24 17.9	9.53281	0.4883	4.39	5.55	29 1 7.0
30	5 44 53.54	45 17.27	25 30 8.3	30 22.9	9.52332	0.3177	4.42	5.53	30 1 11.1
31	5 52 48.47	53 12.94	25 33 58.1	34 6.3	9.51307	0.0488	4.44	5.51	31 1 15.1
June	6 0 31.91	0 56.97	25 35 32.6	35 34.0	9.50204	+8 3070	4.46	5.49	1 1 18.9
2	6 8 3.33	8 28.83	25 34 58.7	34 53.0	9.49030	-8 8241	4.47	5.47	2 1 22.5
3	6 15 22.40	15 48.18	25 32 22.7	32 9.7	9.47792	0.1732	4.48	5.44	3 1 25.9
4	6 22 28.78	22 54.71	25 27 51.8	27 31.4	9.46479	0.3551	4.50	5.41	4 1 29.0
5	6 29 22.10	29 48.04	25 21 32.6	21 4.9	9.45085	0.4762	4.51	5.39	5 1 31.9
6	6 36 1.98	36 27.79	25 13 32.1	12 57.2	9.43614	0.5648	4.51	5.36	6 1 34.6
7	6 42 28.22	42 53.79	25 3 57.5	3 15.5	9.42067	0.6337	4.52	5.32	7 1 37.1
8	6 48 40.59	49 5.78	24 52 55.4	52 6.6	9.40437	0.6889	4.53	5.29	8 1 39.4
9	6 54 38.87	55 3.55	24 40 32.8	39 37.7	9.38714	0.7341	4.54	5.25	9 1 41.4
10	7 0 22.82	0 46.90	24 26 56.2	25 55.1	9.36892	0.7717	4.54	5.21	10 1 43.2
11	7 5 52.25	6 15.64	24 12 12.3	11 5.5	9.34960	0.8032	4.55	5.16	11 1 44.7
12	7 11 6.90	11 29.48	23 56 27.8	55 16.1	9.32908	0.8296	4.55	5.11	12 1 46.0
13	7 16 6.60	16 28.28	23 39 49.0	38 32.8	9.30723	0.8520	4.56	5.06	13 1 47.1
14	7 20 51.09	21 11.78	23 22 22.2	21 2.1	9.28383	0.8704	4.57	5.00	14 1 47.9
15	7 25 20.14	25 39.75	23 4 14.1	2 50.7	9.25869	0.8858	4.58	4.93	15 1 48.4
16	7 29 33.40	29 51.95	22 45 30.4	44 4.4	9.23153	0.8982	4.59	4.84	16 1 48.6
17	7 33 30.86	33 48.11	22 26 18.0	24 50.0	9.20200	0.9080	4.59	4.74	17 1 48.6
18	7 37 11.95	37 27.91	22 6 42.9	5 13.8	9.16974	0.9151	4.60	4.60	18 1 48.3
19	7 40 36.49	40 51.12	21 46 51.1	45 21.4	9.13422	0.9201	4.61	4.40	19 1 47.7
20	7 43 44.14	43 57.39	21 26 48.9	25 19.4	9.09478	0.9228	4.62	-4.03	20 1 46.9
21	7 46 34.62	46 46.46	21 6 42.2	5 13.5	9.05051	0.9232	4.62	+3.72	21 1 45.8
22	7 49 7.56	49 17.97	20 46 37.7	45 10.6	9.00018	0.9213	4.63	4.28	22 1 44.4
23	7 51 22.63	51 31.56	20 26 41.2	25 16.3	8.94208	0.9173	4.64	4.55	23 1 42.7
24	7 53 19.50	53 26.98	20 6 59.4	5 37.4	8.87376	0.9107	4.65	4.70	24 1 40.7
25	7 54 57.88	55 3.92	19 47 38.3	46 19.9	8.79121	0.9018	4.65	4.81	25 1 38.4
26	7 56 17.49	56 22.11	19 28 44.0	27 20.7	8.68727	0.8902	4.66	4.90	26 1 35.7
27	7 57 18.08	57 21.33	19 10 23.1	9 13.5	8.54934	0.8759	4.66	4.98	27 1 32.8
28	7 57 59.47	58 1.41	18 52 41.6	51 37.0	8.34345	0.8586	4.67	5.04	28 1 29.5
29	7 58 21.56	58 22.27	18 35 45.8	34 46.8	+7.93559	0.8376	4.67	5.10	29 1 25.9
30	7 58 24.31	58 23.89	18 19 42.0	18 48.8	-7.67954	0.8129	4.66	5.14	30 1 22.0
31	7 58 7.85	58 6.48	+18 4 35.7	3 48.5	-8.25645	-9.7838	-4.66	+5.18	31 1 17.8

FOR WASHINGTON MEAN NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.			Apparent Declination.			Log of α .		Log of δ .		Mean Solar Time of Meridian Transit.	
	At Mean Noon.			At Transit.			In R.A.	In Dec.	In R.A.	In Dec.		
	h	m	s	m	s							
July 1	7	53	7.85	58	6.48	+18° 4' 35.7	3 48.5	-8.25645	-0.7838	-4.66	+5.18	1 1 17.8
2	7	57	32.44	57	30.18	17 50 32.9	49 51.8	8.49263	9.7497	4.65	5.22	2 1 13.3
3	7	56	38.48	56	35.50	17 37 38.9	37 3.9	8.64129	9.7097	4.63	5.25	3 1 8.4
4	7	55	26.59	55	23.07	17 25 58.5	25 29.5	8.74798	9.6624	4.61	5.28	4 1 3.3
5	7	53	57.60	53	53.70	17 15 36.7	15 13.4	8.82933	9.6260	4.59	5.30	5 0 57.9
6	7	52	12.57	52	8.50	17 6 37.5	6 19.6	8.89335	9.5378	4.55	5.31	6 0 52.2
7	7	50	12.79	50	8.73	16 59 4.2	58 51.1	8.94422	9.4538	4.50	5.33	7 0 46.3
8	7	47	59.86	47	55.99	16 52 59.3	52 50.4	8.98447	9.3463	4.44	5.34	8 0 40.1
9	7	45	35.56	45	32.06	16 48 25.4	48 20.0	9.01570	9.2003	4.35	5.34	9 0 33.8
10	7	43	1.99	42	59.00	16 45 23.0	45 20.4	9.03884	8.9761	4.23	5.34	10 0 27.3
11	7	40	21.42	40	19.07	16 43 52.6	43 51.9	9.05445	-8.4915	4.03	5.34	11 0 20.7
12	7	37	36.38	37	34.76	16 43 53.2	43 53.6	9.06285	+8.5011	-3.65	5.33	12 0 14.1
13	7	34	49.48	34	48.63	16 45 23.2	45 23.9	9.07649	8.9622	+3.35	5.32	13 0 7.4
14	7	32	3.53	32	3.45	16 48 19.9	48 20.0	9.07799	9.1819	3.95	5.30	14 0 0.7
15	7	29	21.27	29	21.92	16 52 39.7	52 38.5	9.04427	9.3189	4.19	5.28	14 23 54.1
16	7	26	45.54	26	46.85	16 58 18.6	58 15.3	9.02216	9.4175	4.35	5.25	15 23 47.6
17	7	24	19.10	24	20.94	17 5 11.1	5 5.2	8.99661	9.4923	4.46	5.21	16 23 41.2
18	7	22	4.56	22	6.77	17 13 11.3	13 2.4	8.94797	9.5510	4.54	5.17	17 23 35.1
19	7	20	4.42	20	6.82	17 22 13.0	22 0.8	8.89150	9.5976	4.60	5.12	18 23 29.2
20	7	18	20.95	18	23.35	17 32 9.2	31 53.5	8.81681	9.6346	4.65	5.05	19 23 23.5
21	7	16	56.18	16	58.36	17 42 52.1	42 32.8	8.71528	9.6635	4.69	4.97	20 23 18.1
22	7	15	51.99	15	53.74	17 54 13.8	53 51.1	8.56893	9.6857	4.72	4.87	21 23 13.1
23	7	15	9.91	15	11.01	18 6 6.1	5 40.2	8.32644	9.7018	4.75	4.72	22 23 8.5
24	7	14	51.32	14	51.61	18 18 20.3	17 51.5	-7.65385	9.7122	4.77	4.49	23 23 4.2
25	7	14	57.26	14	56.53	18 30 47.5	30 16.4	+8.10929	9.7170	4.79	+3.89	24 23 0.3
26	7	15	28.62	15	26.71	18 43 18.2	42 45.4	8.48829	9.7164	4.80	-4.15	25 22 56.9
27	7	16	26.09	16	22.87	18 55 43.0	55 9.1	8.69183	9.7100	4.80	4.58	26 22 53.9
28	7	17	50.08	17	45.46	19 7 51.9	7 17.6	8.82998	9.6974	4.81	4.80	27 22 51.3
29	7	19	40.86	19	34.79	19 19 34.8	19 1.1	8.93596	9.6783	4.81	4.94	28 22 49.2
30	7	21	58.61	21	51.04	19 30 41.3	30 8.7	9.02128	9.6509	4.81	5.05	29 22 47.6
31	7	24	43.28	24	34.22	19 41 0.5	40 30.1	9.09223	9.6140	4.81	5.14	30 22 46.4
Aug. 1	7	27	54.67	27	44.13	19 50 21.9	49 54.5	9.15265	9.5647	4.80	5.22	0 22 45.6
2	7	31	32.46	31	20.52	19 58 34.1	58 10.4	9.20502	9.4926	4.80	5.29	1 22 45.3
3	7	35	36.24	35	22.98	20 5 25.9	5 6.8	9.25085	9.4073	4.78	5.34	2 22 45.4
4	7	40	5.36	39	50.90	20 10 46.0	10 32.0	9.29116	9.2739	4.77	5.39	3 22 45.9
5	7	44	59.00	44	43.51	20 14 23.4	14 15.1	9.32685	9.0521	4.76	5.44	4 22 46.8
6	7	50	16.34	49	59.98	20 16 7.2	16 4.8	9.35858	+8.4736	4.74	5.47	5 22 48.2
7	7	55	56.26	55	39.21	20 15 47.0	15 51.0	9.38670	-8.7751	4.71	5.51	6 22 49.9
8	8	1	57.51	1	39.97	20 13 13.9	13 23.4	9.41156	9.1916	4.68	5.53	7 22 51.9
9	8	8	18.70	8	0.92	20 8 16.6	8 33.3	9.43341	9.4099	4.64	5.55	8 22 54.3
10	8	14	58.22	14	40.36	20 0 50.6	1 13.3	9.45243	9.5604	4.60	5.57	9 22 57.1
11	8	21	54.36	21	36.72	19 50 48.4	51 16.7	9.46886	9.6753	4.55	5.58	10 23 0.0
12	8	29	5.29	28	48.01	19 38 5.8	38 39.0	9.48277	9.7679	4.49	5.59	11 23 3.2
13	8	36	23.99	36	12.37	19 22 40.3	23 17.5	9.49429	9.8449	4.41	5.59	12 23 6.7
14	8	44	3.46	43	47.64	19 4 31.2	5 11.5	9.50360	9.9100	4.32	5.59	13 23 10.3
15	8	51	46.65	51	31.78	18 43 40.2	44 22.5	9.51084	9.9658	4.21	5.58	14 23 14.1
16	8	59	36.55	59	22.78	18 20 10.3	20 53.6	9.51611	0.0141	4.05	5.57	15 23 18.0
17	9	7	31.18	7	18.61	17 54 7.2	54 50.4	9.51959	0.0559	3.84	5.54	16 23 22.0
18	9	15	28.69	15	17.41	17 25 37.3	26 19.3	9.52139	0.0921	+3.44	5.52	17 23 26.0
19	9	23	27.35	23	17.40	16 54 48.8	55 28.6	9.52172	0.1238	-2.94	5.49	18 23 30.1
20	9	31	25.65	31	17.07	16 21 50.8	22 27.5	9.52073	0.1512	3.63	5.46	19 23 34.1
21	9	39	22.19	39	14.97	15 46 52.9	47 25.6	9.51856	0.1750	3.85	5.42	20 23 38.1
22	9	47	15.80	47	9.93	15 10 5.6	10 33.7	9.51541	0.1954	3.97	5.38	21 23 42.1
23	9	55	5.51	55	0.96	14 31 39.3	32 2.2	9.51139	0.2132	4.06	5.33	22 23 46.0
24	10	2	50.49	2	47.22	13 51 44.2	52 1.4	9.50665	0.2233	4.11	5.27	23 23 49.8
25	10	10	30.11	10	28.06	13 10 30.2	10 41.5	9.50134	0.2413	4.15	5.22	24 23 53.5
26	10	18	3.89	18	3.00	12 28 7.2	28 12.3	9.49557	0.2523	4.17	5.16	25 23 57.2
27	10	25	31.49	25	31.70	11 44 44.5	44 43.2	9.48942	0.2615	4.19	5.09	26 23 0.7
28	10	32	52.66	32	53.91	11 0 30.5	0 22.9	9.48302	0.2693	4.20	5.02	28 0 4.1
29	10	40	7.23	40	9.51	10 15 33.1	15 19.1	9.47647	0.2756	4.20	4.94	29 0 7.4
30	10	47	15.35	47	18.48	9 29 50.8	29 39.5	9.46979	0.2838	4.20	4.84	30 0 10.6
31	10	54	16.85	54	20.84	+ 8 43 57.4	43 31.0	+9.46308	-0.2849	-4.19	-4.74	31 0 13.7

FOR WASHINGTON MEAN NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.			Apparent Declination.			Log of α .		Log of δ .		Mean Solar Time of Meridian Transit.		
	At Mean Noon.			At Transit.			In R.A.	In Dec.	In R.A.	In Dec.			
	h	m	s	m	s						d	h	m
Sept. 1	11	1	11.89	1	16.66	+ 7 57 32.0	56 59.6	+9.45637	-0.2880	-4.18	-4.62	1	0 16.7
2	11	8	0.58	8	6.09	7 10 49.4	10 11.2	9.44972	0.2902	4.17	4.46	2	0 19.5
3	11	14	43.11	14	49.30	6 23 54.8	23 11.1	9.44317	0.2918	4.16	4.27	3	0 22.3
4	11	21	19.66	21	26.49	5 36 52.5	36 3.5	9.43672	0.2925	4.14	-3.86	4	0 25.0
5	11	27	50.42	27	57.85	4 49 47.2	48 53.1	9.43042	0.2927	4.13	+3.16	5	0 27.6
6	11	34	15.63	34	23.61	4 2 42.5	1 43.6	9.42428	0.2923	4.11	4.00	6	0 30.0
7	11	40	35.52	40	44.02	3 15 42.0	14 38.5	9.41833	0.2914	4.09	4.27	7	0 32.4
8	11	46	50.30	46	59.28	2 28 49.2	27 41.4	9.41254	0.2901	4.07	4.38	8	0 34.7
9	11	53	0.21	53	9.64	1 42 6.5	40 54.7	9.40697	0.2882	4.05	4.50	9	0 37.0
10	11	59	5.49	59	15.35	0 55 36.9	54 21.3	9.40157	0.2861	4.03	4.57	10	0 39.1
11	12	5	6.33	5	16.59	+ 0 9 22.7	8 3.6	9.39637	0.2834	4.00	4.64	11	0 41.2
12	12	11	2.96	11	13.60	- 0 36 33.5	37 55.9	9.39137	0.2804	3.98	4.68	12	0 43.2
13	12	16	55.58	17	6.57	1 22 10.0	23 35.4	9.38655	0.2772	3.96	4.72	13	0 45.1
14	12	22	44.38	22	55.70	2 7 24.5	8 52.7	9.38191	0.2735	3.94	4.75	14	0 47.0
15	12	28	29.54	28	41.18	2 52 15.4	53 46.2	9.37743	0.2696	3.92	4.79	15	0 48.8
16	12	34	11.22	34	23.16	3 36 40.7	38 13.8	9.37314	0.2652	3.90	4.81	16	0 50.6
17	12	39	40.62	40	1.85	4 20 38.9	22 14.1	9.36900	0.2606	3.88	4.84	17	0 52.3
18	12	45	24.84	45	37.33	5 4 8.3	5 45.4	9.36498	0.2557	3.86	4.86	18	0 53.9
19	12	50	57.03	51	9.78	5 47 7.3	48 46.1	9.36108	0.2504	3.85	4.88	19	0 55.5
20	12	56	26.29	56	39.27	6 29 34.4	31 14.6	9.35729	0.2449	3.83	4.91	20	0 57.0
21	13	1	52.72	2	5.93	7 11 28.0	13 9.5	9.35359	0.2390	3.82	4.92	21	0 58.5
22	13	7	16.42	7	20.85	7 52 46.8	54 29.4	9.34908	0.2328	3.81	4.94	22	1 0.0
23	13	12	37.46	12	51.09	8 33 29.3	35 12.7	9.34640	0.2261	3.80	4.96	23	1 1.4
24	13	17	55.86	18	9.68	9 13 34.0	15 18.0	9.34283	0.2191	3.80	4.98	24	1 2.8
25	13	23	11.65	23	25.65	9 52 59.3	54 43.6	9.33925	0.2118	3.80	4.99	25	1 4.1
26	13	28	24.85	28	39.01	10 31 43.9	33 28.5	9.33566	0.2040	3.80	5.01	26	1 5.4
27	13	33	35.44	33	49.74	11 9 46.0	11 30.6	9.33198	0.1958	3.81	5.02	27	1 6.6
28	13	38	43.37	38	57.80	11 47 4.1	48 48.3	9.32820	0.1871	3.81	5.04	28	1 7.8
29	13	43	48.59	44	3.13	12 23 36.3	25 20.0	9.32427	0.1779	3.83	5.06	29	1 8.9
30	13	48	50.99	49	5.63	12 59 21.1	61 4.1	9.32021	0.1681	3.85	5.08	30	1 10.0
Oct. 1	13	53	50.43	54	5.13	13 34 16.4	35 58.5	9.31581	0.1576	3.87	5.09	1	1 11.1
2	13	58	46.76	59	1.51	14 8 20.5	10 1.3	9.31103	0.1465	3.90	5.11	2	1 12.1
3	14	3	39.77	3	54.54	14 41 31.1	43 10.5	9.30593	0.1346	3.93	5.12	3	1 13.0
4	14	8	29.20	8	43.95	15 13 46.2	15 23.9	9.30036	0.1218	3.97	5.14	4	1 13.9
5	14	13	14.77	13	29.46	15 45 3.3	46 39.0	9.29423	0.1081	4.01	5.16	5	1 14.7
6	14	17	56.12	18	10.73	16 15 19.9	16 53.4	9.28741	0.0934	4.05	5.18	6	1 15.5
7	14	22	32.83	22	47.32	16 44 33.1	46 4.0	9.27977	0.0774	4.09	5.20	7	1 16.1
8	14	27	4.43	27	18.73	17 12 40.1	14 8.0	9.27114	0.0596	4.14	5.22	8	1 16.7
9	14	31	30.35	31	44.41	17 39 37.5	41 2.1	9.26140	0.0404	4.18	5.24	9	1 17.2
10	14	35	49.98	36	3.77	18 5 22.0	6 43.1	9.25026	0.0196	4.23	5.27	10	1 17.6
11	14	40	2.55	40	15.99	18 29 49.5	31 6.5	9.23746	9.9962	4.28	5.29	11	1 17.8
12	14	44	7.26	44	20.26	18 52 55.8	54 8.5	9.22271	9.9702	4.33	5.31	12	1 17.9
13	14	48	3.16	48	15.65	19 14 36.3	15 44.1	9.20551	9.9406	4.38	5.34	13	1 17.9
14	14	51	49.16	52	1.06	19 34 45.6	35 48.2	9.18540	9.9067	4.43	5.37	14	1 17.7
15	14	55	24.09	55	35.29	19 53 18.1	54 15.0	9.16164	9.8677	4.48	5.39	15	1 17.3
16	14	58	46.54	58	56.93	20 10 7.4	10 58.0	9.13332	9.8217	4.52	5.42	16	1 16.6
17	15	1	55.04	2	4.54	20 25 6.3	25 50.4	9.09927	9.7664	4.57	5.45	17	1 15.9
18	15	4	47.92	4	56.45	20 38 6.8	38 44.0	9.05775	9.6981	4.62	5.48	18	1 14.9
19	15	7	23.36	7	30.80	20 49 0.1	49 29.8	9.00614	9.6009	4.67	5.52	19	1 13.5
20	15	9	39.32	9	45.57	20 57 36.2	57 58.1	8.94035	9.4889	4.72	5.55	20	1 11.8
21	15	11	33.66	11	38.63	21 3 44.1	3 57.9	8.85355	9.3039	4.76	5.58	21	1 9.8
22	15	13	4.09	13	7.69	21 7 11.8	7 17.4	8.73192	-8.9327	4.80	5.62	22	1 7.3
23	15	14	8.22	14	10.44	21 7 46.2	7 43.4	8.54230	+8.5975	4.84	5.65	23	1 4.5
24	15	14	43.70	14	44.53	21 5 12.9	5 3.0	+8.15020	9.2430	4.87	5.69	24	1 1.1
25	15	14	48.17	14	47.67	20 59 17.1	58 58.6	-7.91279	9.5059	4.90	5.72	25	0 57.2
26	15	14	19.49	14	17.79	20 49 43.5	49 18.1	8.50326	9.6790	4.93	5.75	26	0 52.8
27	15	13	15.92	13	13.20	20 36 17.8	35 47.0	8.75265	9.8084	4.94	5.77	27	0 47.8
28	15	11	36.29	11	32.82	20 18 47.2	18 12.7	8.91305	9.9123	4.94	5.79	28	0 42.2
29	15	9	20.24	9	16.38	19 57 1.9	56 26.0	9.02952	9.9983	4.93	5.80	29	0 36.0
30	15	6	28.50	6	24.66	19 30 58.1	30 23.7	9.11813	0.0701	4.91	5.79	30	0 29.2
31	15	3	3.16	3	59.81	19 0 39.6	0 10.2	9.18619	0.1299	4.86	5.76	31	0 21.8
32	14	59	7.82	59	5.40	-18 26 20.4	25 59.3	-9.23733	+0.1785	-4.77	+5.71	32	0 14.0

FOR WASHINGTON MEAN NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of α .		Log of δ .		Mean Solar Time of Meridian Transit.
	At Mean Noon.	At Transit.	At Mean Noon.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
	h m s	m s	° ' "	° ' "					d h m
Nov. 1	14 59 7.82	59 5.40	-18 26 20.4	25 59.3	-9.23733	+0.1785	-4.77	+5.71	1 0 14.0
2	14 54 47.77	54 46.69	17 48 27.3	48 17.8	9.27340	0.2159	4.63	5.62	2 0 5.8
3	14 50 9.83	51 10.37	17 7 41.3	7 46.1	9.29630	0.2422	4.37	5.46	2 23 57.3
4	14 45 22.19	45 24.49	16 24 56.8	25 17.4	9.30335	0.2570	-3.23	+5.10	3 23 48.6
5	14 40 33.84	40 37.83	15 41 19.4	41 56.0	9.29715	0.2598	+4.33	-4.70	4 23 39.9
6	14 35 54.39	35 59.81	14 58 3.0	58 54.0	9.27622	0.2499	4.63	5.37	5 23 31.3
7	14 31 32.70	31 39.12	14 16 23.6	17 25.9	9.23950	0.2265	4.80	5.61	6 23 23.1
8	14 27 37.00	27 43.87	13 37 33.8	38 43.1	9.18466	0.1891	4.90	5.75	7 23 15.2
9	14 24 14.05	24 20.75	13 2 36.4	3 47.7	9.10826	0.1347	4.96	5.83	8 23 7.9
10	14 21 28.85	21 34.79	12 32 21.4	33 29.5	9.00325	0.0619	4.99	5.88	9 23 12
11	14 19 24.70	19 29.37	12 7 23.8	8 24.0	8.85436	9.9660	5.01	5.91	10 22 55.2
12	14 18 3.17	18 6.15	11 48 2.7	48 51.3	8.62051	9.8374	5.01	5.91	11 22 49.9
13	14 17 24.31	17 25.30	11 34 23.1	34 57.3	-8.09267	9.6548	5.00	5.90	12 22 45.3
14	14 17 26.99	17 25.80	11 26 17.8	26 35.9	+8.20005	9.3509	4.98	5.88	13 22 41.3
15	14 18 9.19	18 5.77	11 23 30.5	23 31.9	8.62782	+8.0348	4.95	5.85	14 22 38.1
16	14 19 28.30	19 22.69	11 25 38.4	25 23.2	8.62653	-9.2679	4.91	5.81	15 22 35.4
17	14 21 21.34	21 13.64	11 32 15.0	31 44.1	8.95216	9.5587	4.87	5.76	16 22 33.3
18	14 23 45.23	23 35.59	11 42 51.5	42 6.2	-9.04105	9.7147	4.82	5.70	17 22 31.8
19	14 26 36.87	26 25.47	11 56 58.6	56 0.5	9.10762	9.8162	4.77	5.64	18 22 30.7
20	14 29 53.29	29 40.34	12 14 8.2	12 59.0	9.15946	9.8677	4.72	5.57	19 22 30.0
21	14 33 31.76	33 17.46	12 33 53.5	32 35.1	9.20076	9.9401	4.67	5.49	20 22 29.6
22	14 37 20.73	37 14.26	12 55 49.6	54 23.6	9.23421	9.9794	4.62	5.41	21 22 29.6
23	14 41 44.91	41 28.49	13 19 33.2	18 1.5	9.26177	0.0990	4.56	5.32	22 22 30.0
24	14 46 15.30	45 58.09	13 44 44.0	43 7.9	9.28468	0.0315	4.51	5.21	23 22 30.6
25	14 50 59.06	50 41.22	14 11 3.5	9 24.5	9.30303	0.0479	4.45	5.10	24 22 31.3
26	14 55 54.67	55 36.34	14 38 15.1	36 34.4	9.32027	0.0599	4.40	4.96	25 22 32.2
27	15 1 0.73	0 42.05	15 6 4.4	4 23.1	9.33425	0.0679	4.35	4.77	26 22 33.4
28	15 6 16.09	5 57.17	15 34 18.8	32 37.9	9.34633	0.0729	4.30	4.53	27 22 34.7
29	15 11 39.74	11 20.69	16 2 47.0	1 7.4	9.35682	0.0750	4.25	-3.92	28 22 36.2
30	15 17 10.77	16 51.66	16 31 18.7	29 41.0	9.36602	0.0747	4.21	+4.08	29 22 37.7
Dec. 1	15 22 48.48	22 29.41	16 50 45.4	58 10.1	9.37412	0.0725	4.16	4.48	0 22 39.4
2	15 28 32.19	28 13.22	17 27 59.4	26 27.1	9.38139	0.0683	4.12	4.67	1 22 41.1
3	15 34 21.38	34 2.59	17 55 53.9	54 25.0	9.38790	0.0624	4.08	4.79	2 22 43.0
4	15 40 15.58	39 57.02	18 23 22.8	21 57.7	9.39377	0.0549	4.04	4.87	3 22 45.0
5	15 46 14.38	45 56.11	18 50 20.9	48 59.8	9.39914	0.0460	4.01	4.93	4 22 47.1
6	15 52 17.46	51 59.50	19 16 43.6	15 26.7	9.40406	0.0357	3.98	4.98	5 22 49.2
7	15 58 24.50	58 6.91	19 42 26.3	41 13.6	9.40863	0.0239	3.96	5.02	6 22 51.4
8	16 4 35.31	4 18.12	20 7 25.5	6 17.3	9.41284	0.0107	3.92	5.05	7 22 53.6
9	16 10 49.57	10 32.82	20 31 37.5	30 33.9	9.41679	9.9961	3.91	5.08	8 22 55.9
10	16 17 7.18	16 50.91	20 54 59.2	54 0.2	9.42054	9.9801	3.88	5.10	9 22 58.2
11	16 23 27.96	23 12.19	21 17 28.2	16 33.7	9.42405	9.9627	3.86	5.13	10 22 0.6
12	16 29 51.75	29 36.51	21 39 1.5	38 11.5	9.42739	9.9435	3.84	5.15	11 22 3.1
13	16 36 18.44	36 3.76	21 59 36.6	58 51.0	9.43058	9.9228	3.83	5.16	12 22 5.5
14	16 42 47.91	42 33.83	22 19 11.6	18 30.4	9.43363	9.9000	3.81	5.18	13 22 8.1
15	16 49 20.06	49 6.60	22 37 44.1	37 7.1	9.43654	9.8753	3.79	5.19	14 22 10.7
16	16 55 54.79	55 41.97	22 55 11.8	54 38.9	9.43933	9.8482	3.78	5.20	15 22 13.4
17	17 2 32.02	2 19.86	23 11 33.8	11 4.9	9.44201	9.8187	3.76	5.21	16 22 16.1
18	17 9 11.66	9 0.18	23 26 47.9	26 22.7	9.44459	9.7858	3.75	5.23	17 22 18.8
19	17 15 53.63	15 42.84	23 40 51.8	40 30.2	9.44706	9.7493	3.73	5.23	18 22 21.5
20	17 22 37.85	22 27.80	23 53 44.6	53 26.4	9.44944	9.7089	3.72	5.24	19 22 24.3
21	17 29 24.25	29 14.96	24 5 24.6	5 9.5	9.45172	9.6631	3.70	5.25	20 22 27.2
22	17 36 12.75	36 4.23	24 15 50.2	15 38.0	9.45392	9.6107	3.69	5.26	21 22 30.0
23	17 43 3.28	42 55.55	24 24 59.9	24 50.3	9.45601	9.5499	3.67	5.27	22 22 32.9
24	17 49 55.74	49 48.82	24 32 52.5	32 45.2	9.45801	9.4786	3.65	5.28	23 22 35.9
25	17 56 50.07	56 43.97	24 39 26.5	39 21.3	9.45993	9.3900	3.63	5.28	24 22 38.8
26	18 3 46.18	3 40.92	24 44 40.6	44 37.1	9.46175	9.2793	3.61	5.29	25 22 41.8
27	18 10 44.00	10 39.60	24 48 33.5	48 31.5	9.46348	9.1248	3.59	5.30	26 22 44.9
28	18 17 43.42	17 39.90	24 51 4.1	51 3.2	9.46507	8.8737	3.56	5.30	27 22 47.9
29	18 24 44.33	24 41.70	24 52 10.9	52 10.7	9.46657	-8.2334	3.53	5.31	28 22 51.0
30	18 31 46.64	31 44.91	24 51 53.0	51 53.2	9.46796	+8.6251	3.49	5.32	29 22 54.1
31	18 38 50.25	38 49.44	24 50 9.0	50 9.3	9.46923	9.0098	3.46	5.32	30 22 57.2
32	18 45 55.05	45 55.16	-24 46 58.0	46 58.0	+9.47040	+9.2127	+3.42	+5.33	32 0 0.4

VENUS, 1868.

353

FOR WASHINGTON MEAN NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.			Apparent Declination.		Log of a.		Log of b.		Mean Solar Time of Meridian Transit.
	At			At		In R.A.		In Dec.		
	Mean Noon.	At Transit.		Mean Noon.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
Jan. 1	20 29 46.10	30 9.23		-20 41' 2.7"	30 44.3	+9.33401	+9.8635	-3.51	+4.91	1 1 47.3
2	20 34 56.15	35 19.46		20 23 14.2	31 52.2	9.33215	9.8776	3.52	4.92	2 1 48.5
3	20 40 4.86	40 28.33		20 4 50.6	3 25.1	9.33022	9.8913	3.51	4.91	3 1 49.7
4	20 45 12.22	45 35.83		19 45 52.6	44 23.5	9.32835	9.9043	3.52	4.90	4 1 50.9
5	20 50 18.22	50 41.97		19 26 20.8	24 48.2	9.32640	9.9167	3.52	4.89	5 1 52.0
6	20 55 22.85	55 46.74		19 6 16.0	4 39.9	9.32441	9.9285	3.52	4.88	6 1 53.2
7	21 0 26.09	0 50.11		18 45 38.9	43 59.3	9.32244	9.9397	3.52	4.87	7 1 54.3
8	21 5 27.95	5 52.07		18 24 30.2	22 47.3	9.32045	9.9503	3.52	4.85	8 1 55.3
9	21 10 28.43	10 52.64		18 2 50.9	1 4.6	9.31844	9.9604	3.52	4.85	9 1 56.3
10	21 15 27.53	15 51.86		17 40 41.7	38 52.0	9.31645	9.9701	3.52	4.83	10 1 57.4
11	21 20 25.26	20 49.71		17 18 - 3.1	16 10.0	9.31447	9.9794	3.51	4.82	11 1 58.5
12	21 25 21.62	25 46.16		16 54 55.9	52 59.5	9.31242	9.9882	3.51	4.81	12 1 59.5
13	21 30 16.60	30 41.23		16 31 21.1	29 21.4	9.31043	9.9966	3.50	4.78	13 2 0.5
14	21 35 10.23	35 34.93		16 7 19.3	5 16.5	9.30840	0.0046	3.50	4.78	14 2 1.4
15	21 40 2.51	40 27.28		15 42 51.3	40 45.4	9.30646	0.0122	3.50	4.78	15 2 2.3
16	21 44 53.48	45 18.32		15 17 58.0	15 49.0	9.30449	0.0195	3.49	4.75	16 2 3.2
17	21 49 43.14	50 8.05		14 52 40.1	50 28.1	9.30257	0.0264	3.49	4.74	17 2 4.1
18	21 54 31.52	54 56.49		14 26 58.3	24 43.3	9.30058	0.0331	3.47	4.72	18 2 5.0
19	21 59 18.61	59 43.66		14 0 53.4	58 35.5	9.29873	0.0393	3.47	4.71	19 2 5.9
20	22 4 4.47	4 29.57		13 34 26.4	32 5.7	9.29680	0.0452	3.46	4.69	20 2 6.7
21	22 8 49.08	9 14.23		13 7 38.1	5 14.6	9.29493	0.0509	3.45	4.68	21 2 7.5
22	22 13 32.48	13 57.68		12 40 20.2	38 3.0	9.29312	0.0563	3.44	4.66	22 2 8.3
23	22 18 14.71	18 39.96		12 13 0.4	10 31.6	9.29135	0.0615	3.44	4.64	23 2 9.1
24	22 22 55.79	23 21.09		11 45 12.5	42 41.9	9.28966	0.0663	3.42	4.62	24 2 9.9
25	22 27 35.73	28 1.07		11 17 6.5	14 32.7	9.28784	0.0708	3.41	4.60	25 2 10.6
26	22 32 14.57	32 39.94		10 48 43.1	46 6.9	9.28612	0.0753	3.41	4.57	26 2 11.3
27	22 36 52.32	37 17.71		10 20 2.9	17 24.5	9.28443	0.0793	3.40	4.56	27 2 11.9
28	22 41 20.01	41 54.42		9 51 7.0	48 26.4	9.28282	0.0831	3.38	4.53	28 2 12.5
29	22 46 4.68	46 30.13		9 21 56.1	19 13.4	9.28119	0.0867	3.36	4.51	29 2 13.2
30	22 50 30.34	51 4.81		8 52 31.0	49 46.2	9.27964	0.0902	3.35	4.48	30 2 13.8
31	22 55 13.04	55 38.54		8 22 52.3	20 5.5	9.27814	0.0934	3.33	4.46	31 2 14.4
Feb. 1	22 59 45.81	60 11.34		7 53 0.9	50 12.3	9.27669	0.0964	3.31	4.42	1 2 15.0
2	23 4 17.69	4 43.25		7 22 57.6	20 7.2	9.27531	0.0992	3.30	4.38	2 2 15.6
3	23 8 48.72	9 14.32		6 52 43.2	49 51.1	9.27397	0.1017	3.29	4.36	3 2 16.2
4	23 13 18.92	13 44.53		6 22 18.7	19 25.0	9.27265	0.1040	3.26	4.33	4 2 16.7
5	23 17 48.32	18 13.95		5 51 44.7	48 49.5	9.27138	0.1062	3.22	4.30	5 2 17.2
6	23 22 16.96	22 42.61		5 21 1.7	18 5.1	9.27020	0.1083	3.20	4.29	6 2 17.7
7	23 26 44.89	27 10.57		4 50 10.4	47 12.4	9.26908	0.1101	3.18	4.19	7 2 18.2
8	23 31 12.15	31 37.86		4 19 11.6	16 12.2	9.26800	0.1117	3.13	4.13	8 2 18.7
9	23 35 38.78	36 4.54		3 48 6.3	45 5.5	9.26706	0.1131	3.11	4.08	9 2 19.3
10	23 40 4.84	40 30.64		3 16 55.3	13 53.2	9.26615	0.1144	3.10	3.99	10 2 19.8
11	23 44 30.35	44 56.21		2 45 39.1	42 35.9	9.26525	0.1155	3.04	3.94	11 2 20.4
12	23 48 55.34	49 21.24		2 14 18.6	11 14.4	9.26444	0.1164	3.01	3.82	12 2 20.9
13	23 53 19.86	53 45.79		1 42 54.4	39 49.3	9.26370	0.1172	2.96	3.76	13 2 21.3
14	23 57 43.95	58 9.92		1 11 27.3	8 21.4	9.26301	0.1178	2.89	3.54	14 2 21.7
15	0 2 7.65	2 33.67		0 39 57.8	36 51.1	9.26245	0.1182	2.86	+3.29	15 2 22.2
16	0 6 31.02	6 57.10		0 8 26.8	5 19.3	9.26191	0.1185	2.81		16 2 22.7
17	0 10 54.08	11 20.21		0 23 5.0	26 13.0	9.26143	0.1186	2.68	-3.16	17 2 23.1
18	0 15 16.88	15 43.06		0 54 36.8	57 45.3	9.26107	0.1185	2.64	3.53	18 2 23.5
19	0 19 39.47	20 5.70		1 26 7.9	29 16.8	9.26074	0.1183	2.59	3.68	19 2 23.9
20	0 24 1.87	24 28.17		1 57 37.6	0 47.0	9.26041	0.1179	2.38	3.82	20 2 24.4
21	0 28 24.10	28 50.48		2 20 5.2	32 15.0	9.26019	0.1173	2.16	3.94	21 2 24.9
22	0 32 46.22	33 12.67		3 0 29.9	3 39.9	9.26007	0.1165	1.99	4.00	22 2 25.3
23	0 37 8.28	37 34.79		3 31 51.0	35 1.2	9.25997	0.1156	-1.38	4.07	23 2 25.7
24	0 41 30.30	41 56.88		4 3 7.9	6 18.1	9.25996	0.1146	+1.38	4.13	24 2 26.1
25	0 45 52.31	46 18.97		4 34 19.9	37 30.1	9.25997	0.1134	2.08	4.19	25 2 26.5
26	0 50 14.33	50 41.06		5 5 26.3	8 36.4	9.25907	0.1120	2.38	4.23	26 2 26.9
27	0 54 36.40	55 3.21		5 36 26.2	39 36.1	9.26014	0.1104	2.46	4.27	27 2 27.3
28	0 58 58.58	59 25.48		6 7 18.9	10 28.6	9.26036	0.1086	2.46	4.33	28 2 27.7
29	1 3 20.89	3 47.89		6 38 3.7	41 13.0	9.26054	0.1066	2.59	4.36	29 2 28.2
30	1 7 43.33	8 10.43		7 8 39.7	11 48.6	9.26075	0.1045	2.72	4.38	30 2 28.6
31	1 12 5.93	12 33.13	+ 7 39 6.3	42 14.8	+9.26108	+0.1022	+2.81	-4.41		31 2 29.1

FOR WASHINGTON MEAN NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of α .		Log of δ .		Mean Solar Time of Meridian Transit.
	At Mean Noon.	At Transit.	At Mean Noon.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
Mar. 1	h m s 1 7 43.33	m s 8 10.43	+ ° ' " 7 8 39.7	11 48.6	+9.26075	+0.1045	+2.72	-4.38	d h m 1 2 28.6
2	1 12 5.93	12 33.13	7 39 6.3	42 14.8	9.26108	0.1022	2.81	4.41	2 2 29.1
3	1 16 28.75	16 56.05	8 9 22.9	12 30.9	9.26151	0.0997	2.81	4.45	3 2 29.5
4	1 20 51.83	21 19.23	8 39 28.8	42 36.1	9.26191	0.0970	2.86	4.47	4 2 29.9
5	1 25 15.17	25 42.69	9 9 23.1	12 29.8	9.26239	0.0941	2.91	4.49	5 2 30.4
6	1 29 38.82	30 6.47	9 39 5.2	42 11.2	9.26295	0.0911	2.91	4.52	6 2 30.9
7	1 34 2.81	34 30.57	10 8 34.5	11 39.6	9.26351	0.0878	2.93	4.54	7 2 31.3
8	1 38 27.15	38 55.03	10 37 50.2	40 54.5	9.26408	0.0844	2.99	4.56	8 2 31.8
9	1 42 51.86	43 19.88	11 6 51.6	9 54.9	9.26472	0.0808	3.03	4.58	9 2 32.3
10	1 47 16.98	47 45.13	11 35 38.0	38 40.2	9.26544	0.0768	3.04	4.59	10 2 32.7
11	1 51 42.55	52 10.83	12 4 8.6	7 9.7	9.26618	0.0728	3.08	4.61	11 2 33.2
12	1 56 8.59	56 37.03	12 32 22.9	35 22.8	9.26699	0.0685	3.08	4.62	12 2 33.8
13	2 0 35.13	1 3.71	13 0 20.1	3 18.8	9.26781	0.0640	3.08	4.64	13 2 34.3
14	2 5 2.17	5 30.90	13 27 59.7	30 57.0	9.26859	0.0593	3.13	4.65	14 2 34.8
15	2 9 29.72	9 58.59	13 55 20.9	58 16.7	9.26948	0.0544	3.14	4.68	15 2 35.2
16	2 13 57.83	14 26.85	14 22 23.3	25 17.6	9.27044	0.0493	3.13	4.69	16 2 35.7
17	2 18 26.52	18 55.70	14 49 6.0	51 58.8	9.27134	0.0438	3.14	4.71	17 2 36.2
18	2 22 55.78	23 25.13	15 15 28.2	18 19.4	9.27228	0.0381	3.16	4.72	18 2 36.8
19	2 27 25.63	27 55.14	15 41 29.3	44 18.6	9.27325	0.0321	3.18	4.73	19 2 37.3
20	2 31 56.09	32 25.78	16 7 8.6	9 56.1	9.27426	0.0259	3.16	4.74	20 2 37.9
21	2 36 27.17	36 57.04	16 32 25.6	35 11.3	9.27523	0.0194	3.16	4.76	21 2 38.5
22	2 40 58.86	41 28.91	16 57 19.6	60 3.3	9.27621	0.0126	3.16	4.77	22 2 39.1
23	2 45 31.16	46 1.41	17 21 49.8	24 31.4	9.27717	0.0055	3.18	4.78	23 2 39.8
24	2 50 4.07	50 34.51	17 45 55.6	48 35.1	9.27818	9.9981	3.16	4.78	24 2 40.4
25	2 54 37.61	55 8.25	18 9 36.6	12 14.0	9.27917	9.9905	3.14	4.80	25 2 41.1
26	2 59 11.76	59 42.58	18 32 52.2	35 27.3	9.28010	9.9824	3.14	4.81	26 2 41.7
27	3 3 46.50	4 17.50	18 55 41.6	58 14.2	9.28104	9.9739	3.14	4.82	27 2 42.3
28	3 8 21.83	8 53.01	19 18 3.9	20 34.0	9.28194	9.9651	3.11	4.83	28 2 42.9
29	3 12 57.71	13 29.07	19 39 58.6	42 26.1	9.28279	9.9559	3.11	4.84	29 2 43.5
30	3 17 34.13	18 55.68	20 1 25.2	3 50.1	9.28366	9.9463	3.08	4.85	30 2 44.2
31	3 22 11.09	22 42.83	20 22 23.2	24 45.4	9.28446	9.9364	3.06	4.85	31 2 44.9
Apr. 1	3 26 48.55	27 20.49	20 42 52.0	45 11.4	9.28523	9.9259	3.06	4.86	1 2 45.6
2	3 31 26.50	31 58.63	21 2 50.9	5 7.5	9.28598	9.9150	3.01	4.87	2 2 46.3
3	3 36 4.90	36 37.21	21 22 19.5	24 33.1	9.28667	9.9036	2.96	4.88	3 2 47.0
4	3 40 43.72	41 16.22	21 41 17.1	43 27.6	9.28728	9.8916	2.96	4.88	4 2 47.7
5	3 45 22.93	45 55.61	21 59 43.2	1 50.5	9.28791	9.8792	2.89	4.89	5 2 48.4
6	3 50 2.52	50 35.37	22 17 37.5	19 41.6	9.28843	9.8663	2.86	4.90	6 2 49.1
7	3 54 42.43	55 15.46	22 34 59.6	37 0.4	9.28894	9.8528	2.81	4.90	7 2 49.8
8	3 59 22.65	59 55.85	22 51 48.9	53 46.3	9.28939	9.8385	2.68	4.91	8 2 50.5
9	4 4 3.13	4 36.49	23 8 4.9	9 58.8	9.28973	9.8236	2.59	4.91	9 2 51.2
10	4 8 43.81	9 17.33	23 23 47.2	25 37.5	9.29001	9.8079	2.46	4.91	10 2 51.9
11	4 13 24.65	13 58.32	23 38 55.4	40 42.1	9.29024	9.7917	2.16	4.93	11 2 52.6
12	4 18 5.61	18 39.43	23 53 29.3	55 12.2	9.29036	9.7744	+1.99	4.93	12 2 53.3
13	4 22 46.64	23 20.62	24 7 28.3	9 7.4	9.29047	9.7563	-1.68	4.93	13 2 54.1
14	4 27 27.71	28 1.85	24 20 52.2	22 27.4	9.29050	9.7373	2.38	4.94	14 2 54.9
15	4 32 8.76	32 43.01	24 33 40.8	35 12.0	9.29039	9.7172	2.59	4.94	15 2 55.5
16	4 36 49.71	37 24.06	24 45 53.7	47 20.9	9.29019	9.6960	2.76	4.94	16 2 56.1
17	4 41 30.49	42 4.95	24 57 30.8	58 53.0	9.28985	9.6736	2.83	4.94	17 2 56.8
18	4 46 11.03	46 45.60	25 8 31.8	9 50.8	9.28945	9.6499	2.91	4.94	18 2 57.5
19	4 50 51.28	51 25.94	25 18 56.6	20 11.3	9.28897	9.6244	3.01	4.94	19 2 58.2
20	4 55 31.18	56 5.93	25 28 44.9	29 55.5	9.28838	9.5977	3.10	4.95	20 2 58.9
21	5 0 10.65	0 45.48	25 37 56.9	39 3.2	9.28764	9.5689	3.18	4.94	21 2 59.6
22	5 4 49.59	5 24.48	25 46 32.2	47 34.1	9.28670	9.5379	3.21	4.94	22 3 0.3
23	5 9 27.90	10 2.84	25 54 30.8	55 28.3	9.28572	9.5047	3.28	4.95	23 3 0.9
24	5 14 5.53	14 40.50	26 1 52.7	2 45.8	9.28456	9.4684	3.33	4.95	24 3 1.7
25	5 18 42.37	19 17.37	26 8 37.7	9 26.3	9.28323	9.4288	3.36	4.95	25 3 2.4
26	5 23 18.32	23 53.34	26 14 45.8	15 30.0	9.28179	9.3852	3.41	4.94	26 3 3.1
27	5 27 53.31	28 28.34	26 20 17.1	20 56.8	9.28021	9.3371	3.46	4.94	27 3 3.8
28	5 32 27.24	33 2.26	26 25 11.8	25 46.9	9.27842	9.2832	3.50	4.94	28 3 4.5
29	5 36 59.99	37 34.98	26 29 30.1	30 0.6	9.27645	9.2220	3.52	4.94	29 3 5.2
30	5 41 31.46	42 6.41	26 33 12.1	33 38.1	9.27434	9.1502	3.55	4.94	30 3 5.9
31	5 46 1.56	46 36.45	+26 36 17.8	36 39.3	+9.27209	+9.0667	-3.58	-4.94	31 3 6.5

FOR WASHINGTON MEAN NOON AND MERIDIAN TRANSIT.

Day of Month	Apparent Right Ascension.		Apparent Declination.		Log of α .		Log of δ .		Mean Solar Time of Meridian Transit.	
	At		At		In R.A.	In Dec.	In R.A.	In Dec.		
	Mean Noon.	Transit.	Mean Noon.	Transit.						
	h	m s	m s	° ' "	° ' "				d h m	
May 1	5 46	1.56	46 36.45	+26 36 17.8	36 39.3	+9.27209	+9.0667	-3.58	-4.94	1 3 6.5
2	5 50	30.20	51 5.00	26 38 47.8	39 4.6	9.26961	8.9612	3.60	4.94	2 3 7.1
3	5 54	57.26	55 31.94	26 40 41.9	40 54.1	9.26695	8.8248	3.63	4.93	3 3 7.6
4	5 59	22.63	59 57.16	26 42 0.6	42 8.3	9.26410	8.6270	3.65	4.93	4 3 8.1
5	6 3	46.21	4 20.58	26 42 44.2	42 47.3	9.26108	+8.2549	3.68	4.92	5 3 8.5
6	6 8	7.90	8 42.09	26 42 52.9	42 51.4	9.25783	-7.7910	3.69	4.91	6 3 8.9
7	6 12	27.59	13 1.58	26 42 27.1	42 21.1	9.25444	8.4751	3.72	4.90	7 3 9.2
8	6 16	45.19	17 18.95	26 41 27.4	41 16.9	9.25081	8.7270	3.74	4.90	8 3 9.6
9	6 21	0.59	21 34.10	26 39 54.2	39 39.4	9.24699	8.8822	3.76	4.89	9 3 9.9
10	6 25	13.69	25 46.93	26 37 48.1	37 29.0	9.24295	8.9958	3.79	4.89	10 3 10.1
11	6 29	24.38	29 57.33	26 35 9.4	34 45.9	9.23866	9.0852	3.80	4.89	11 3 10.3
12	6 33	32.54	34 5.18	26 31 58.5	31 30.8	9.23416	9.1574	3.82	4.88	12 3 10.5
13	6 37	38.08	38 10.39	26 28 16.2	27 44.4	9.22944	9.2184	3.84	4.87	13 3 10.7
14	6 41	40.89	42 12.85	26 24 3.1	23 27.3	9.22445	9.2704	3.86	4.86	14 3 10.8
15	6 45	40.85	46 12.44	26 19 20.0	18 40.2	9.21920	9.3159	3.87	4.85	15 3 10.9
16	6 49	37.85	50 9.04	26 14 7.5	13 23.9	9.21365	9.3567	3.89	4.83	16 3 10.9
17	6 53	31.77	54 2.55	26 8 26.0	7 38.6	9.20784	9.3931	3.90	4.81	17 3 10.9
18	6 57	22.50	57 52.83	26 2 16.3	1 25.2	9.20174	9.4259	3.92	4.80	18 3 10.8
19	7 1	9.92	1 39.77	25 55 39.2	54 44.6	9.19529	9.4553	3.94	4.79	19 3 10.6
20	7 4	53.89	5 23.24	25 48 35.6	47 37.6	9.18844	9.4820	3.95	4.78	20 3 10.4
21	7 8	34.27	9 3.10	25 41 6.3	40 5.1	9.18125	9.5064	3.96	4.76	21 3 10.1
22	7 12	10.94	12 39.21	25 33 12.1	32 7.8	9.17373	9.5290	3.98	4.75	22 3 9.6
23	7 15	43.78	16 11.45	25 24 53.6	23 46.3	9.16574	9.5498	4.00	4.73	23 3 9.2
24	7 19	12.63	19 39.71	25 16 11.7	15 1.5	9.15732	9.5689	4.01	4.71	24 3 8.8
25	7 22	37.35	23 3.81	25 7 7.4	5 54.6	9.14839	9.5863	4.02	4.69	25 3 8.3
26	7 25	57.79	26 23.60	24 57 41.9	56 26.6	9.13896	9.6020	4.04	4.68	26 3 7.7
27	7 29	13.80	29 38.93	24 47 56.2	46 38.5	9.12899	9.6168	4.06	4.66	27 3 7.0
28	7 32	25.23	32 49.69	24 37 50.9	36 31.1	9.11840	9.6307	4.07	4.63	28 3 6.2
29	7 35	31.91	35 55.65	24 27 26.8	26 5.2	9.10716	9.6435	4.08	4.60	29 3 5.3
30	7 38	33.68	38 56.63	24 16 45.0	15 21.7	9.09534	9.6549	4.10	4.57	30 3 4.4
31	7 41	30.40	41 52.54	24 5 46.8	4 21.8	9.08264	9.6654	4.12	4.54	31 3 3.4
June 1	7 44	21.88	44 43.23	23 54 33.1	53 6.7	9.06917	9.6752	4.13	4.50	1 3 2.4
2	7 47	7.95	47 28.47	23 43 4.9	41 37.4	9.05479	9.6839	4.14	4.47	2 3 1.2
3	7 49	48.43	50 8.08	23 31 23.4	29 54.9	9.03939	9.6918	4.15	4.43	3 2 59.8
4	7 52	23.14	52 41.91	23 19 29.6	18 0.2	9.02303	9.6990	4.17	4.38	4 2 58.5
5	7 54	51.93	55 9.81	23 7 24.5	5 54.5	9.00549	9.7054	4.18	4.34	5 2 57.1
6	7 57	14.62	57 31.59	22 55 9.3	53 38.9	8.98662	9.7111	4.20	4.29	6 2 55.5
7	7 59	31.02	59 47.06	22 42 45.0	41 14.5	8.96634	9.7161	4.20	4.23	7 2 53.9
8	8 1	40.95	1 56.05	22 30 12.7	28 42.3	8.94445	9.7203	4.21	4.13	8 2 52.2
9	8 3	44.22	3 58.34	22 17 33.6	16 3.5	8.92053	9.7239	4.23	4.03	9 2 50.2
10	8 5	40.61	5 53.75	22 4 48.9	3 19.2	8.89456	9.7268	4.24	3.88	10 2 48.2
11	8 7	29.94	7 42.09	21 51 59.7	50 30.7	8.86613	9.7290	4.25	3.68	11 2 46.1
12	8 9	12.01	9 23.16	21 39 7.2	37 39.1	8.83481	9.7305	4.26	-3.20	12 2 43.8
13	8 10	46.61	10 56.74	21 26 12.6	24 45.7	8.79996	9.7313	4.27	+2.68	13 2 41.4
14	8 12	13.53	12 22.65	21 13 17.1	11 51.5	8.76129	9.7315	4.28	3.53	14 2 38.9
15	8 13	32.59	13 40.69	21 0 21.9	58 57.8	8.71740	9.7310	4.30	3.79	15 2 36.3
16	8 14	43.55	14 50.64	20 47 28.1	46 5.7	8.66707	9.7298	4.32	3.96	16 2 33.6
17	8 15	46.19	15 52.26	20 34 37.0	33 16.5	8.60872	9.7280	4.33	4.08	17 2 30.6
18	8 16	40.31	16 45.37	20 21 49.8	20 31.4	8.53939	9.7254	4.34	4.16	18 2 27.6
19	8 17	25.69	17 29.75	20 9 7.7	7 51.6	8.45432	9.7222	4.34	4.23	19 2 24.4
20	8 18	2.11	18 5.20	19 56 31.8	55 18.1	8.34611	9.7174	4.35	4.33	20 2 21.1
21	8 18	29.39	18 31.52	19 44 3.2	42 52.1	8.19747	9.7136	4.36	4.36	21 2 17.5
22	8 18	47.33	18 48.52	19 31 43.4	30 35.0	7.96418	9.7083	4.37	4.41	22 2 13.9
23	8 18	55.76	18 56.05	19 19 33.2	18 27.8	+7.40631	9.7022	4.38	4.46	23 2 10.1
24	8 18	54.52	18 53.95	19 7 33.8	6 31.4	-7.62697	9.6952	4.38	4.50	24 2 6.1
25	8 18	43.45	18 42.06	18 55 46.5	54 47.1	8.04603	9.6875	4.38	4.53	25 2 2.0
26	8 18	22.43	18 20.28	18 44 12.2	43 16.0	8.25711	9.6790	4.38	4.56	26 1 57.6
27	8 17	51.38	17 48.52	18 32 52.0	31 59.1	8.39878	9.6698	4.38	4.59	27 1 53.2
28	8 17	10.28	17 6.77	18 21 46.9	20 57.4	8.50581	9.6595	4.38	4.61	28 1 48.6
29	8 16	19.11	16 15.03	18 10 58.0	10 11.9	8.59192	9.6483	4.38	4.62	29 1 43.8
30	8 15	17.90	15 13.34	18 0 26.1	59 43.3	8.66289	9.6364	4.37	4.64	30 1 38.9
31	8 14	6.80	14 1.83	+17 50 11.8	49 32.4	-8.72274	-9.6238	-4.36	+4.66	31 1 33.8

FOR WASHINGTON MEAN NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of α .		Log of δ .		Mean Solar Time of Meridian Transit.
	At Mean Noon.	At Transit.	At Mean Noon.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
July 1	h m s	m s	+17° 50' 11.8"	49° 32.4"	-8.72274	-9.6238	-4.36	+4.66	d h m
2	8 14 6.80	14 1.83	17 40 15.8	39 39.8	8.77457	9.6101	4.34	4.68	1 1 33.8
3	8 12 46.01	12 40.72	17 30 39.0	30 6.3	8.81968	9.5054	4.33	4.69	2 1 28.5
4	8 11 15.73	11 10.23	17 21 22.2	20 52.8	8.85909	9.5793	4.30	4.71	3 1 23.0
5	8 9 36.26	9 30.65	17 12 26.2	12 0.0	8.89360	9.5622	4.28	4.71	4 1 17.5
6	8 7 47.99	7 42.36	17 3 51.4	3 28.3	8.92381	9.5444	4.24	4.73	5 1 11.8
7	8 5 51.37	5 45.83	16 55 38.1	55 18.0	8.95014	9.5251	4.20	4.73	6 1 5.9
8	8 3 46.93	3 41.57	16 47 47.0	47 29.8	8.97303	9.5043	4.15	4.74	7 0 59.9
9	8 1 35.26	1 30.18	16 40 18.7	40 4.3	8.99267	9.4817	4.09	4.74	8 0 53.8
10	7 59 17.01	59 12.32	16 33 13.6	33 1.7	9.00913	9.4582	4.00	4.75	9 0 47.6
11	7 56 52.91	56 48.71	16 26 31.6	26 22.2	9.02251	9.4334	3.89	4.75	10 0 41.3
12	7 54 23.78	54 20.13	16 20 12.9	20 5.7	9.03301	9.4062	3.74	4.76	11 0 34.8
13	7 51 50.50	51 47.44	16 14 18.0	14 12.8	9.04063	9.3769	3.54	4.77	12 0 28.3
14	7 49 13.98	49 11.58	16 8 47.2	8 43.8	9.04579	9.3452	-3.03	4.78	13 0 21.8
15	7 46 35.16	46 33.46	16 3 40.8	3 39.0	9.04886	9.3098	+3.14	4.77	14 0 15.3
16	7 43 54.93	43 53.96	15 58 59.2	58 58.8	9.04817	9.2720	3.57	4.78	15 0 8.7
17	7 41 14.26	41 14.03	15 54 42.2	54 43.0	9.04524	9.2301	3.78	4.78	16 0 2.1
18	7 38 34.14	38 34.64	15 50 50.0	50 51.7	9.03972	9.1835	3.91	4.78	17 0 55.5
19	7 35 55.56	35 56.78	15 47 22.7	47 25.1	9.03161	9.1315	4.01	4.78	18 0 48.9
20	7 33 19.45	33 21.34	15 44 20.2	44 23.0	9.02070	9.0716	4.09	4.77	19 0 42.4
21	7 30 46.71	30 49.23	15 41 42.6	41 45.6	9.00685	9.0033	4.15	4.76	20 0 36.0
22	7 28 18.24	28 21.33	15 39 29.5	39 32.5	8.99012	8.9244	4.20	4.76	21 0 29.6
23	7 25 54.89	25 58.48	15 37 40.4	37 43.3	8.97039	8.8284	4.24	4.73	22 0 23.3
24	7 23 37.42	23 41.43	15 36 15.1	36 17.6	8.94732	8.7062	4.27	4.73	23 0 17.1
25	7 21 26.53	21 30.87	15 35 13.3	35 15.2	8.92082	8.5307	4.30	4.72	24 0 11.0
26	7 19 22.88	19 27.46	15 34 34.4	34 35.6	8.89047	8.2810	4.33	4.71	25 0 5.2
27	7 17 27.04	17 31.77	15 34 17.6	34 17.9	8.85566	-7.5298	4.34	4.69	26 0 59.2
28	7 15 39.53	15 44.32	15 34 22.3	34 21.5	8.81620	+8.0320	4.36	4.68	27 0 53.4
29	7 14 0.81	14 5.55	15 34 47.6	34 45.7	8.77101	8.3943	4.37	4.64	28 0 47.8
30	7 12 31.22	12 35.81	15 35 32.5	35 29.4	8.71901	8.5796	4.38	4.62	29 0 42.5
31	7 11 11.07	11 15.42	15 36 35.9	36 31.5	8.65835	8.7032	4.38	4.59	30 0 37.0
Aug. 1	7 10 0.61	10 4.63	15 37 56.7	37 50.9	8.58671	8.7940	4.38	4.56	31 0 32.0
2	7 9 0.04	9 3.65	15 39 33.7	39 26.6	8.49094	8.6637	4.38	4.51	1 22 27.1
3	7 8 9.48	8 12.59	15 41 25.6	41 17.1	8.39052	8.5186	4.38	4.46	2 22 22.3
4	7 7 29.00	7 31.53	15 43 31.0	43 21.2	8.24476	8.3625	4.38	4.41	3 22 17.7
5	7 6 58.63	7 0.51	15 45 48.5	45 37.5	8.02576	8.0988	4.38	4.36	4 22 13.3
6	7 6 38.31	6 39.50	15 48 16.8	48 4.5	-7.56999	9.0286	4.37	4.27	5 22 9.0
7	7 6 27.96	6 28.41	15 50 54.5	50 41.0	+7.49097	9.0522	4.37	4.17	6 22 4.8
8	7 6 27.47	6 27.13	15 53 40.0	53 25.5	7.99209	9.0703	4.36	4.01	7 22 0.8
9	7 6 36.72	6 35.54	15 56 31.7	56 16.3	8.21510	9.0844	4.35	3.88	8 21 57.1
10	7 6 55.55	6 53.50	15 59 28.2	59 12.0	8.35884	9.0940	4.34	3.69	9 21 53.4
11	7 7 23.76	7 20.83	16 2 28.0	2 11.2	8.46448	9.1005	4.33	+3.16	10 21 49.9
12	7 8 1.13	7 57.29	16 5 29.8	5 12.5	8.54742	9.1039	4.31	-3.37	11 21 46.7
13	7 8 47.44	8 42.67	16 8 32.2	8 14.5	8.61543	9.1029	4.30	3.76	12 21 43.5
14	7 9 42.46	9 36.74	16 11 33.5	11 15.6	8.67223	9.0988	4.28	3.96	13 21 40.4
15	7 10 45.95	10 39.28	16 14 32.4	14 14.5	8.72114	9.0908	4.26	4.08	14 21 37.6
16	7 11 57.62	11 50.02	16 17 27.4	17 9.6	8.76374	9.0802	4.25	4.19	15 21 34.8
17	7 13 17.23	13 8.69	16 20 17.4	19 59.9	8.80125	9.0654	4.24	4.26	16 21 32.2
18	7 14 44.52	14 35.04	16 23 1.0	22 44.0	8.83477	9.0471	4.23	4.35	17 21 29.6
19	7 16 19.23	16 8.83	16 25 36.9	25 20.5	8.86489	9.0229	4.21	4.38	18 21 27.3
20	7 18 1.13	17 49.81	16 28 3.6	27 48.0	8.89206	8.9942	4.19	4.43	19 21 25.0
21	7 19 49.97	19 37.76	16 30 20.1	30 5.5	8.91660	8.9606	4.18	4.47	20 21 22.9
22	7 21 45.49	21 32.39	16 32 25.4	32 11.9	8.93917	8.9190	4.16	4.51	21 21 20.8
23	7 23 47.44	23 33.47	16 34 18.2	34 6.1	8.95981	8.8694	4.15	4.54	22 21 18.9
24	7 25 55.61	25 40.79	16 35 57.5	35 46.9	8.97887	8.8078	4.13	4.57	23 21 17.0
25	7 28 9.77	27 54.12	16 37 22.2	37 13.2	8.99649	8.7208	4.11	4.60	24 21 15.3
26	7 30 29.72	30 13.24	16 38 31.2	38 24.0	9.01287	8.6270	4.09	4.62	25 21 13.6
27	7 32 55.25	32 37.98	16 39 23.5	39 18.3	9.02800	8.4851	4.07	4.65	26 21 12.1
28	7 35 26.16	35 8.13	16 40 14.6	40 13.7	9.04205	8.2566	4.06	4.68	27 21 10.9
29	7 38 2.23	37 43.46	16 40 11.5	40 13.0	9.05529	+7.6867	4.04	4.69	28 21 9.4
30	7 40 43.27	40 23.78	+16 39 48.2	39 52.2	9.06760	-7.9522	4.03	4.70	29 21 8.1
31	7 43 29.12	43 8.93			+9.07906	-8.3641	+4.01	-4.72	30 21 7.0
	7 46 19.58	45 58.72							31 21 5.9

FOR WASHINGTON MEAN NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of α .		Log of δ .		Mean Solar Time of Meridian Transit.
	At Mean Noon.	At Transit.	At Mean Noon.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
	$^{\text{h}}$ $^{\text{m}}$ $^{\text{s}}$	$^{\text{m}}$ $^{\text{s}}$	$^{\circ}$ $'$ $''$	$^{\circ}$ $'$ $''$					$^{\text{d}}$ $^{\text{h}}$ $^{\text{m}}$
Sept. 1	7 49 14.46	48 52.95	+16 39 4.0	39 10.5	+9.08986	-8.5804	+3.99	-4.73	0 21 4.9
2	7 52 13.60	51 51.47	16 37 58.0	38 7.2	9.09397	8.7276	3.97	4.74	1 21 3.9
3	7 55 16.83	54 54.09	16 36 29.6	36 41.6	9.10947	8.8395	3.96	4.75	2 21 3.0
4	7 58 23.99	58 0.65	16 34 38.2	34 53.3	9.11838	8.9316	3.94	4.77	3 21 2.1
5	8 1 34.91	1 11.03	16 32 23.0	32 41.1	9.12677	9.0098	3.92	4.78	4 21 1.4
6	8 4 49.44	4 25.05	16 29 43.4	30 4.6	9.13465	9.0764	3.90	4.78	5 21 0.8
7	8 8 7.42	7 42.41	16 26 39.1	27 3.5	9.14202	9.1357	3.88	4.79	6 21 0.1
8	8 11 28.69	11 3.26	16 23 9.5	23 37.2	9.14894	9.1884	3.86	4.80	7 20 59.4
9	8 14 53.11	14 27.22	16 19 14.2	19 45.3	9.15553	9.2363	3.84	4.81	8 20 58.9
10	8 18 20.55	17 54.22	16 14 52.7	15 27.2	9.16169	9.2810	3.82	4.80	9 20 58.4
11	8 21 50.86	21 24.10	16 10 4.4	10 42.4	9.16742	9.3208	3.80	4.81	10 20 57.9
12	8 25 23.89	24 56.74	16 4 49.4	5 30.8	9.17285	9.3583	3.77	4.81	11 20 57.5
13	8 28 59.50	28 31.97	15 59 7.2	59 52.2	9.17790	9.3927	3.75	4.82	12 20 57.1
14	8 32 37.56	32 9.68	15 52 57.7	53 46.3	9.18262	9.4251	3.73	4.82	13 20 56.8
15	8 36 17.95	35 49.75	15 46 20.5	47 12.7	9.18715	9.4557	3.71	4.82	14 20 56.6
16	8 40 0.58	39 32.07	15 39 15.3	40 11.1	9.19142	9.4844	3.68	4.82	15 20 56.4
17	8 43 45.33	43 16.53	15 31 42.0	32 41.4	9.19538	9.5112	3.65	4.82	16 20 56.2
18	8 47 32.07	47 2.99	15 23 40.7	24 43.2	9.19904	9.5364	3.63	4.82	17 20 56.0
19	8 51 20.68	50 51.35	15 15 11.3	16 18.1	9.20252	9.5607	3.61	4.82	18 20 55.9
20	8 55 11.08	54 41.50	15 6 13.5	7 24.0	9.20582	9.5835	3.58	4.82	19 20 55.8
21	8 59 3.18	58 33.37	14 56 47.5	58 1.5	9.20890	9.6051	3.56	4.82	20 20 55.7
22	9 2 56.89	2 26.87	14 46 53.3	48 11.0	9.21178	9.6260	3.55	4.82	21 20 55.6
23	9 6 52.11	6 21.90	14 36 30.6	37 52.0	9.21455	9.6455	3.52	4.82	22 20 55.6
24	9 10 48.79	10 18.40	14 25 39.8	27 4.8	9.21714	9.6646	3.50	4.82	23 20 55.6
25	9 14 46.84	14 16.28	14 14 20.6	15 49.2	9.21955	9.6826	3.47	4.82	24 20 55.6
26	9 18 46.18	18 15.46	14 2 33.3	4 5.5	9.22182	9.6998	3.45	4.82	25 20 55.6
27	9 22 46.74	22 15.88	13 50 18.1	51 53.8	9.22398	9.7162	3.42	4.82	26 20 55.7
28	9 26 48.47	26 17.48	13 37 35.0	39 14.2	9.22603	9.7322	3.40	4.82	27 20 55.8
29	9 30 51.31	30 20.20	13 24 24.1	26 6.8	9.22796	9.7474	3.36	4.81	28 20 55.9
30	9 34 55.19	34 23.97	13 10 45.7	12 31.8	9.22974	9.7618	3.34	4.81	29 20 56.0
Oct. 1	9 39 0.04	38 28.72	12 56 40.2	58 29.7	9.23137	9.7756	3.33	4.81	0 20 56.1
2	9 43 5.80	42 34.39	12 42 7.7	44 0.6	9.23292	9.7892	3.29	4.81	1 20 56.2
3	9 47 12.45	46 40.95	12 27 8.2	29 4.4	9.23443	9.8022	3.28	4.80	2 20 56.4
4	9 51 19.91	50 48.35	12 11 42.1	13 41.5	9.23586	9.8145	3.25	4.79	3 20 56.6
5	9 55 28.15	54 56.53	11 55 49.8	57 52.4	9.23719	9.8264	3.20	4.78	4 20 56.8
6	9 59 37.13	59 5.45	11 39 31.6	41 37.3	9.23840	9.8377	3.19	4.78	5 20 57.0
7	10 3 46.77	3 15.04	11 22 48.0	24 56.8	9.23956	9.8488	3.16	4.78	6 20 57.2
8	10 7 57.05	7 25.27	11 5 39.2	7 51.1	9.24069	9.8592	3.13	4.77	7 20 57.4
9	10 12 7.91	11 36.10	10 48 5.8	50 20.6	9.24159	9.8693	3.10	4.76	8 20 57.6
10	10 16 19.33	15 47.50	10 30 8.1	32 25.7	9.24254	9.8791	3.06	4.75	9 20 57.9
11	10 20 31.28	19 59.43	10 11 46.4	14 6.9	9.24344	9.8885	3.01	4.73	10 20 58.1
12	10 24 43.72	24 11.85	9 53 1.2	55 24.5	9.24418	9.8973	3.01	4.73	11 20 58.4
13	10 28 56.59	28 24.72	9 33 53.3	36 19.1	9.24492	9.9058	2.99	4.72	12 20 58.7
14	10 33 9.88	32 38.03	9 14 23.0	16 51.2	9.24564	9.9141	2.93	4.71	13 20 59.1
15	10 37 23.57	36 51.73	8 54 30.7	57 1.4	9.24620	9.9220	2.91	4.70	14 20 59.4
16	10 41 37.63	41 5.80	8 34 17.0	36 50.1	9.24690	9.9296	2.89	4.69	15 20 59.7
17	10 45 52.04	45 20.22	8 13 42.4	16 17.8	9.24746	9.9369	2.86	4.68	16 21 0.1
18	10 50 6.77	49 34.96	7 52 47.4	55 25.2	9.24798	9.9438	2.86	4.66	17 21 0.3
19	10 54 21.80	53 50.01	7 31 32.8	34 12.7	9.24850	9.9503	2.83	4.65	18 21 0.6
20	10 58 37.13	58 5.35	7 9 59.2	12 41.1	9.24900	9.9567	2.83	4.64	19 21 0.9
21	11 2 52.75	2 20.99	6 48 6.9	50 50.9	9.24949	9.9628	2.83	4.62	20 21 1.2
22	11 7 8.66	6 36.92	6 25 56.5	28 42.5	9.24996	9.9685	2.83	4.60	21 21 1.5
23	11 11 24.85	10 53.13	6 3 28.8	6 16.5	9.25044	9.9740	2.83	4.60	22 21 1.8
24	11 15 41.32	15 9.62	5 40 44.2	43 33.6	9.25093	9.9795	2.86	4.57	23 21 2.1
25	11 19 58.08	19 26.41	5 17 43.0	20 34.2	9.25147	9.9844	2.81	4.56	24 21 2.4
26	11 24 15.15	23 43.50	4 54 26.4	57 19.1	9.25193	9.9892	2.81	4.51	25 21 2.8
27	11 28 32.49	28 0.86	4 30 54.7	33 49.0	9.25235	9.9937	2.83	4.52	26 21 3.1
28	11 32 50.09	32 18.50	4 7 8.6	10 4.2	9.25279	9.9980	2.91	4.50	27 21 3.5
29	11 37 7.98	36 36.42	3 43 8.6	46 5.5	9.25336	0.0020	2.91	4.49	28 21 3.9
30	11 41 26.21	40 54.66	3 18 55.5	21 53.6	9.25393	0.0059	2.91	4.46	29 21 4.2
31	11 45 44.78	45 13.26	2 54 29.8	57 29.0	9.25450	0.0096	2.91	4.44	30 21 4.6
32	11 50 3.69	49 32.20	+ 2 29 52.1	32 52.3	+9.25509	-0.0130	+2.91	-4.41	31 21 5.0

FOR WASHINGTON MEAN NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of <i>a</i> .		Log of <i>b</i> .		Mean Solar Time of Meridian Transit
	At Mean Noon.	At Transit.	At Mean Noon.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
	^h ^m ^s	^m ^s	[°] ['] ["]	[°] ['] ["]					^d ^h ^m
Nov. 1	11 50 3.69	49 32.20	+ 2 20 52.1	32 52.3	+0.25509	-0.0130	+2.91	-4.41	0 21 5.0
2	11 54 22.95	53 51.48	2 5 3.1	8 4.2	9.25564	0.0161	2.96	4.38	1 21 5.4
3	11 58 42.56	58 11.11	1 40 3.6	43 5.7	9.25630	0.0192	2.96	4.36	2 21 5.7
4	12 3 2.56	2 31.14	1 14 54.0	17 56.8	9.25695	0.0219	2.96	4.31	3 21 6.1
5	12 7 22.95	6 51.56	0 49 35.2	52 38.6	9.25756	0.0244	2.99	4.26	4 21 6.5
6	12 11 43.72	11 12.35	+ 0 24 8.0	27 12.0	9.25820	0.0267	3.04	4.25	5 21 6.9
7	12 16 4.90	15 33.55	- 0 1 27.2	1 37.6	9.25898	0.0289	3.03	4.17	6 21 7.3
8	12 20 26.54	19 55.21	0 27 9.3	24 4.3	9.25973	0.0308	3.03	4.13	7 21 7.7
9	12 24 48.63	24 17.34	0 52 57.9	49 52.8	9.26044	0.0324	3.04	4.10	8 21 8.2
10	12 29 11.16	28 30.89	1 18 52.1	15 46.9	9.26118	0.0341	3.08	3.96	9 21 8.6
11	12 33 34.16	33 2.90	1 44 51.6	41 46.1	9.26199	0.0353	3.10	3.88	10 21 9.0
12	12 37 57.66	37 26.41	2 10 55.0	7 49.6	9.26285	0.0362	3.10	3.83	11 21 9.4
13	12 42 21.68	41 50.46	2 37 1.6	33 56.4	9.26369	0.0371	3.11	3.68	12 21 9.9
14	12 46 46.22	46 15.03	3 3 11.0	3 6.0	9.26457	0.0378	3.13	3.47	13 21 10.4
15	12 51 11.31	50 40.15	3 29 22.5	26 17.8	9.26548	0.0383	3.16	-2.68	14 21 10.9
16	12 55 36.97	55 5.81	3 55 35.2	52 30.9	9.26647	0.0384	3.16	+2.68	15 21 11.3
17	13 0 3.24	59 32.10	4 21 48.2	18 44.4	9.26744	0.0384	3.19	2.47	16 21 11.8
18	13 4 30.12	3 59.00	4 48 0.9	44 57.7	9.26846	0.0382	3.20	3.66	17 21 12.3
19	13 8 57.64	8 26.54	5 14 12.4	11 10.0	9.26950	0.0378	3.22	3.76	18 21 12.8
20	13 13 25.82	12 54.73	5 40 22.0	37 20.4	9.27062	0.0372	3.23	3.91	19 21 13.3
21	13 17 54.70	17 23.64	6 6 29.1	3 28.5	9.27176	0.0364	3.25	4.01	20 21 13.9
22	13 22 24.30	21 53.28	6 32 32.8	29 33.3	9.27286	0.0353	3.25	4.04	21 21 14.5
23	13 26 54.64	26 23.63	6 58 32.3	55 34.0	9.27410	0.0340	3.30	4.13	22 21 15.0
24	13 31 25.73	30 54.74	7 24 27.1	21 29.9	9.27541	0.0326	3.30	4.19	23 21 15.6
25	13 35 57.64	35 26.67	7 50 16.2	47 20.3	9.27672	0.0309	3.31	4.22	24 21 16.2
26	13 40 30.38	39 59.43	8 15 58.8	13 4.3	9.27803	0.0290	3.34	4.20	25 21 16.8
27	13 45 3.96	44 33.03	8 41 34.3	38 41.2	9.27944	0.0268	3.34	4.33	26 21 17.4
28	13 49 38.44	49 7.52	9 7 1.8	4 10.3	9.28083	0.0245	3.36	4.36	27 21 18.0
29	13 54 13.82	53 42.93	9 32 20.5	29 30.8	9.28230	0.0219	3.36	4.39	28 21 18.7
30	13 58 50.14	58 19.26	9 57 29.7	54 41.8	9.28381	0.0190	3.38	4.42	29 21 19.3
Dec. 1	14 3 27.42	2 56.56	10 22 28.6	19 42.5	9.28534	0.0159	3.38	4.46	0 21 20.0
2	14 8 5.70	7 34.87	10 47 16.4	44 32.3	9.28689	0.0126	3.39	4.48	1 21 20.7
3	14 12 44.98	12 14.18	11 11 52.4	9 10.4	9.28844	0.0090	3.41	4.52	2 21 21.4
4	14 17 25.28	16 54.50	11 36 15.8	33 36.0	9.29019	0.0051	3.40	4.53	3 21 22.1
5	14 22 6.64	21 35.89	12 0 25.6	57 48.1	9.29169	0.0009	3.41	4.56	4 21 22.9
6	14 26 49.05	26 18.35	12 24 21.2	21 46.0	9.29337	0.9965	3.41	4.59	5 21 23.7
7	14 31 32.55	31 1.89	12 48 1.7	45 29.0	9.29499	0.9917	3.43	4.60	6 21 24.5
8	14 36 17.13	35 46.51	13 11 26.2	8 56.1	9.29670	0.9867	3.43	4.62	7 21 25.3
9	14 41 2.84	40 32.25	13 34 34.0	32 6.5	9.29848	0.9815	3.43	4.66	8 21 26.1
10	14 45 49.70	45 19.15	13 57 24.4	54 59.5	9.30014	0.9757	3.45	4.68	9 21 26.9
11	14 50 37.69	50 7.20	14 19 56.4	17 34.3	9.30191	0.9695	3.45	4.68	10 21 27.8
12	14 55 26.84	54 56.41	14 42 9.0	39 49.9	9.30359	0.9632	3.46	4.69	11 21 28.7
13	15 0 17.13	59 46.76	15 4 1.8	1 45.6	9.30537	0.9566	3.47	4.71	12 21 29.6
14	15 5 8.60	4 38.29	15 25 33.9	23 20.7	9.30710	0.9494	3.46	4.73	13 21 30.5
15	15 10 1.24	9 30.99	15 46 44.3	44 34.2	9.30886	0.9419	3.46	4.74	14 21 31.4
16	15 14 55.06	14 24.87	16 7 32.3	5 25.3	9.31058	0.9339	3.46	4.76	15 21 32.3
17	15 19 50.05	19 19.93	16 27 57.1	25 53.3	9.31233	0.9255	3.46	4.78	16 21 33.2
18	15 24 46.22	24 16.18	16 47 57.8	45 57.3	9.31403	0.9167	3.46	4.78	17 21 34.2
19	15 29 43.56	29 13.63	17 7 33.7	5 36.7	9.31579	0.9074	3.45	4.80	18 21 35.3
20	15 34 42.11	34 12.27	17 26 44.2	24 50.6	9.31747	0.8977	3.46	4.81	19 21 36.3
21	15 39 41.82	39 12.09	17 45 28.4	43 38.2	9.31925	0.8873	3.45	4.82	20 21 37.3
22	15 44 42.73	44 13.10	18 3 45.5	1 58.8	9.32088	0.8766	3.44	4.83	21 21 38.4
23	15 49 44.79	49 15.27	18 21 34.9	19 51.7	9.32260	0.8650	3.45	4.84	22 21 39.5
24	15 54 48.02	54 18.61	18 38 55.7	37 16.2	9.32422	0.8530	3.45	4.85	23 21 40.6
25	15 59 52.40	59 23.11	18 55 47.4	54 11.5	9.32588	0.8404	3.44	4.86	24 21 41.7
26	16 4 57.94	4 28.79	19 12 9.2	10 37.0	9.32756	0.8270	3.43	4.87	25 21 42.9
27	16 10 4.64	9 35.63	19 28 0.3	26 31.9	9.32916	0.8127	3.42	4.88	26 21 44.1
28	16 15 12.46	14 43.61	19 43 19.9	41 55.3	9.33075	0.7977	3.41	4.89	27 21 45.3
29	16 20 21.39	19 52.70	19 58 7.5	56 46.7	9.33227	0.7820	3.40	4.90	28 21 46.5
30	16 25 31.39	25 2.88	20 12 22.6	11 5.5	9.33373	0.7653	3.40	4.91	29 21 47.8
31	16 30 42.43	30 14.08	-20 26 4.5	24 51.1	+9.33520	-9.7476	+3.40	+4.92	30 21 49.1

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of α .		Log of δ .		Mean Solar Time of Meridian Transit.
	At Sidereal Oh.	At Transit.	At Sidereal Oh.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
Jan. 1.2	18 47 52.96	47 9.37	23 52 11.6	52 55.4	+9.14299	+9.1497		+4.58	1 0 4.6
2.2	18 51 13.07	50 29.96	23 48 40.5	49 27.2	9.14288	9.1826		4.58	2 0 4.0
3.2	18 54 33.15	53 50.52	23 44 53.1	45 42.9	9.14278	9.2135		4.58	3 0 3.4
4.2	18 57 53.17	57 11.02	23 40 49.6	41 42.3	9.14266	9.2423	-2.28	4.58	4 0 2.8
5.2	19 1 13.14	0 31.46	23 36 30.0	37 25.4	9.14252	9.2692	2.38	4.58	5 0 2.2
6.2	19 4 33.03	3 51.83	23 31 54.3	32 52.4	9.14236	9.2944	2.37	4.58	6 0 1.6
7.2	19 7 52.85	7 12.13	23 27 2.7	28 3.4	9.14218	9.3180	2.42	4.58	7 0 1.0
8.2	19 11 12.58	10 32.34	23 21 55.4	22 58.6	9.14197	9.3401	2.46	4.58	8 0 0.4
9.2	19 14 32.21	13 52.45	23 16 32.4	17 38.0	9.14174	9.3613	2.50	4.58	8 23 59.8
10.2	19 17 51.72	17 12.44	23 10 53.7	12 1.6	9.14145	9.3814	2.54	4.58	9 23 59.2
11.2	19 21 11.09	20 32.30	23 4 59.3	6 9.5	9.14114	9.4005	2.58	4.58	10 23 58.6
12.2	19 24 30.31	23 52.02	22 58 49.4	60 1.7	9.14081	9.4188	2.61	4.58	11 23 58.0
13.2	19 27 49.38	27 11.59	22 52 23.9	53 38.2	9.14046	9.4363	2.64	4.57	12 23 57.3
14.2	19 31 8.28	30 30.99	22 45 42.9	46 59.2	9.14008	9.4530	2.67	4.57	13 23 56.7
15.2	19 34 27.00	33 50.20	22 38 46.6	40 4.8	9.13967	9.4690	2.70	4.57	14 23 56.1
16.2	19 37 45.53	37 9.22	22 31 34.9	32 55.0	9.13924	9.4844	2.73	4.56	15 23 55.5
17.2	19 41 3.85	40 28.04	22 24 8.0	25 29.9	9.13878	9.4992	2.76	4.56	16 23 54.9
18.2	19 44 21.96	43 46.64	22 16 25.8	17 49.4	9.13829	9.5135	2.78	4.56	17 23 54.3
19.2	19 47 39.84	47 5.02	22 8 28.6	9 53.7	9.13778	9.5271	2.81	4.56	18 23 53.7
20.2	19 50 57.48	50 23.16	22 0 16.5	1 43.1	9.13724	9.5401	2.83	4.55	19 23 53.1
21.2	19 54 14.87	53 41.04	21 51 49.7	53 17.7	9.13666	9.5527	2.84	4.55	20 23 52.4
22.2	19 57 31.98	56 58.65	21 43 8.2	44 37.6	9.13603	9.5648	2.85	4.54	21 23 51.8
23.2	20 0 48.80	0 15.97	21 34 12.3	35 42.9	9.13538	9.5765	2.86	4.54	22 23 51.1
24.2	20 4 5.32	3 32.99	21 25 1.9	26 33.7	9.13472	9.5879	2.87	4.53	23 23 50.4
25.2	20 7 21.54	6 49.70	21 15 37.2	17 10.1	9.13404	9.5989	2.88	4.53	24 23 49.7
26.1	20 10 37.45	10 6.11	21 5 58.3	7 32.1	9.13334	9.6095	2.89	4.52	25 23 49.0
27.1	20 13 53.04	13 22.20	20 56 5.2	57 39.9	9.13261	9.6198	2.90	4.52	26 23 48.3
28.1	20 17 8.29	16 37.95	20 45 58.2	47 33.7	9.13185	9.6297	2.92	4.51	27 23 47.6
29.1	20 20 23.20	19 53.36	20 35 37.5	37 13.8	9.13108	9.6392	2.93	4.51	28 23 46.9
30.1	20 23 37.76	23 8.41	20 25 3.4	26 40.3	9.13027	9.6483	2.94	4.51	29 23 46.2
Feb. 31.1	20 26 51.95	26 23.10	20 14 16.0	15 53.4	9.12945	9.6572	2.95	4.50	30 23 45.5
1.1	20 30 5.77	29 37.42	20 3 15.4	4 53.2	9.12862	9.6659	2.96	4.50	31 23 44.8
2.1	20 33 19.22	32 51.35	19 52 1.6	53 39.8	9.12778	9.6744	2.96	4.50	1 23 44.1
3.1	20 36 32.20	36 4.90	19 40 34.7	42 13.2	9.12693	9.6826	2.97	4.49	2 23 43.4
4.1	20 39 44.98	39 18.07	19 28 54.9	30 33.6	9.12605	9.6902	2.97	4.48	3 23 42.7
5.1	20 42 57.28	42 30.85	19 17 2.2	18 41.1	9.12517	9.6983	2.98	4.47	4 23 42.0
6.1	20 46 9.18	45 43.23	19 4 57.1	6 36.1	9.12426	9.7057	2.98	4.47	5 23 41.2
7.1	20 49 20.68	48 55.21	18 52 39.7	54 18.7	9.12337	9.7129	2.98	4.46	6 23 40.5
8.1	20 52 31.79	52 6.79	18 40 10.2	41 49.1	9.12247	9.7199	2.98	4.46	7 23 39.7
9.1	20 55 42.50	55 17.96	18 27 28.7	29 7.5	9.12155	9.7267	2.98	4.45	8 23 39.0
10.1	20 58 52.80	58 28.73	18 14 35.4	16 14.1	9.12062	9.7333	2.98	4.44	9 23 38.2
11.1	21 2 2.70	1 39.10	18 1 30.4	3 8.8	9.11971	9.7397	2.98	4.43	10 23 37.5
12.1	21 5 12.20	4 49.06	17 48 13.9	49 51.9	9.11877	9.7459	2.98	4.42	11 23 36.7
13.1	21 8 21.28	7 58.60	17 34 46.0	36 23.6	9.11781	9.7520	2.98	4.41	12 23 35.9
14.1	21 11 29.95	11 7.74	17 21 7.0	22 44.2	9.11688	9.7578	2.98	4.41	13 23 35.1
15.1	21 14 38.22	14 16.46	17 7 17.2	8 53.8	9.11595	9.7634	2.98	4.40	14 23 34.3
16.1	21 17 46.08	17 24.78	16 53 16.5	54 52.5	9.11498	9.7690	2.98	4.40	15 23 33.5
17.1	21 20 53.51	20 32.67	16 39 5.3	40 40.6	9.11399	9.7743	2.99	4.39	16 23 32.7
18.1	21 24 0.52	23 40.13	16 24 43.7	46 18.3	9.11303	9.7795	2.99	4.38	17 23 31.9
19.1	21 27 7.12	26 47.19	16 10 11.8	11 45.6	9.11207	9.7846	2.99	4.37	18 23 31.1
20.1	21 30 13.31	29 53.84	15 55 30.0	57 3.0	9.11112	9.7894	2.99	4.36	19 23 30.3
21.1	21 33 19.09	33 0.06	15 40 38.4	42 10.4	9.11015	9.7942	3.00	4.35	20 23 29.5
22.1	21 36 24.45	36 5.86	15 25 37.1	27 8.2	9.10916	9.7987	3.00	4.34	21 23 28.6
23.1	21 39 29.39	39 11.24	15 10 26.5	11 56.5	9.10817	9.8031	3.00	4.33	22 23 27.8
24.1	21 42 33.90	42 16.19	14 55 6.7	56 35.6	9.10717	9.8074	3.00	4.33	23 23 26.9
25.1	21 45 37.99	45 20.71	14 39 38.1	41 5.8	9.10617	9.8115	3.00	4.32	24 23 26.0
26.1	21 48 41.66	48 24.81	14 24 0.8	25 27.3	9.10518	9.8155	3.00	4.31	25 23 25.1
27.1	21 51 44.91	51 28.49	14 8 14.8	9 40.1	9.10418	9.8194	3.00	4.30	26 23 24.3
28.1	21 54 47.73	54 31.74	13 52 20.4	53 44.4	9.10318	9.8232	2.99	4.29	27 23 23.4
29.1	21 57 50.14	57 34.57	13 36 17.9	37 40.5	9.10219	9.8268	2.98	4.27	28 23 22.5
30.1	22 0 52.13	0 36.98	13 20 7.4	21 28.6	9.10121	9.8306	2.98	4.26	29 23 21.6
31.1	22 3 53.72	3 38.98	-13 3 49.2	5 9.0	+9.10024	+9.8337	-2.98	+4.24	30 23 20.7

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of α .		Log of δ .		Mean Solar Time of Meridian Transit.
	At Sidereal Oh.	At Transit.	At Sidereal Oh.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
d	h m s	m s	° ' "	' "					d h m
Mar. 1.1	22 0 52.13	0 36.98	-13 20 7.4	21 28.6	+9.10121	+9.8306	-2.98	+4.26	0 23 21.6
2.1	22 3 53.72	3 38.98	13 3 49.2	5 9.0	9.10024	9.8337	2.98	4.24	1 23 20.7
3.1	22 6 54.90	6 40.58	12 47 23.4	48 41.7	9.09927	9.8370	2.98	4.23	2 23 19.8
4.0	22 9 55.68	9 41.77	12 30 50.3	32 7.1	9.09831	9.8308	2.97	4.21	3 23 18.9
5.0	22 12 56.06	12 42.56	12 14 10.0	15 25.2	9.09736	9.8242	2.97	4.20	4 23 17.9
6.0	22 15 56.05	15 42.95	11 57 22.9	58 36.5	9.09644	9.8462	2.96	4.19	5 23 17.0
7.0	22 18 55.66	18 42.96	11 40 29.0	41 40.9	9.09551	9.8491	2.95	4.18	6 23 16.0
8.0	22 21 54.89	21 42.59	11 23 28.4	24 38.7	9.09460	9.8518	2.94	4.17	7 23 15.1
9.0	22 24 53.75	24 41.85	11 6 21.4	7 30.0	9.09372	9.8545	2.94	4.16	8 23 14.2
10.0	22 27 52.25	27 40.74	10 49 8.3	50 15.2	9.09284	9.8570	2.93	4.14	9 23 13.3
11.0	22 30 50.39	30 39.27	10 31 49.3	32 54.4	9.09196	9.8595	2.92	4.13	10 23 12.3
12.0	22 33 48.17	33 37.44	10 14 24.4	15 27.7	9.09111	9.8619	2.91	4.11	11 23 11.3
13.0	22 36 45.61	36 35.26	9 56 53.9	57 55.4	9.09024	9.8641	2.91	4.09	12 23 10.3
14.0	22 39 42.72	39 32.75	9 39 18.0	40 17.7	9.08948	9.8662	2.90	4.07	13 23 9.3
15.0	22 42 39.50	42 29.91	9 21 37.0	22 34.8	9.08867	9.8683	2.89	4.05	14 23 8.3
16.0	22 45 35.95	45 26.74	9 3 51.1	4 46.9	9.08787	9.8703	2.88	4.03	15 23 7.3
17.0	22 48 32.08	48 23.24	8 46 0.5	46 54.3	9.08708	9.8722	2.87	4.01	16 23 6.3
18.0	22 51 27.89	51 19.42	8 28 5.4	28 57.3	9.08630	9.8740	2.86	3.99	17 23 5.3
19.0	22 54 23.39	54 15.29	8 10 6.0	10 55.9	9.08555	9.8757	2.85	3.97	18 23 4.3
20.0	22 57 18.59	57 10.86	7 52 2.3	52 50.1	9.08480	9.8773	2.84	3.95	19 23 3.3
21.0	23 0 13.49	0 6.13	7 33 54.6	34 40.3	9.08407	9.8789	2.84	3.92	20 23 2.2
22.0	23 3 8.10	3 1.11	7 15 43.2	16 26.8	9.08335	9.8803	2.83	3.89	21 23 1.2
23.0	23 6 2.42	5 55.79	6 57 28.2	58 9.8	9.08263	9.8817	2.82	3.86	22 23 0.2
24.0	23 8 56.45	8 50.19	6 39 9.9	39 49.5	9.08193	9.8829	2.81	3.83	23 22 59.2
25.0	23 11 50.21	11 44.31	6 20 48.5	21 26.0	9.08124	9.8841	2.80	3.80	24 22 58.1
26.0	23 14 43.69	14 38.15	6 2 24.3	2 59.7	9.08055	9.8852	2.79	3.77	25 22 57.1
27.0	23 17 36.90	17 31.72	5 43 57.4	44 30.6	9.07990	9.8862	2.78	3.74	26 22 56.1
28.0	23 20 29.86	20 25.04	5 25 28.0	25 59.0	9.07927	9.8871	2.78	3.70	27 22 55.1
29.0	23 23 22.57	23 18.10	5 6 56.4	7 25.2	9.07863	9.8880	2.76	3.65	28 22 54.0
30.0	23 26 15.02	26 10.91	4 48 22.7	48 49.3	9.07799	9.8888	2.74	3.60	29 22 53.0
31.0	23 29 7.22	29 3.47	4 29 47.0	30 11.4	9.07740	9.8895	2.72	3.55	30 22 51.9
Apr. 1.0	23 31 59.20	31 55.80	4 11 9.4	11 31.6	9.07684	9.8902	2.70	3.49	31 22 50.9
2.0	23 34 50.96	34 47.91	3 52 30.5	52 50.5	9.07632	9.8907	2.68	3.44	1 22 49.8
3.0	23 37 42.53	37 39.81	3 33 50.3	34 8.2	9.07580	9.8912	2.66	3.38	2 22 48.8
4.0	23 40 33.88	40 31.50	3 15 8.9	15 24.5	9.07527	9.8916	2.64	3.23	3 22 47.7
5.0	23 43 25.03	43 22.99	2 56 26.5	56 29.9	9.07479	9.8919	2.61	3.08	4 22 46.6
6.0	23 46 16.00	46 14.30	2 37 43.4	37 54.7	9.07436	9.8921	2.59	2.98	5 22 45.5
7.0	23 49 6.81	49 5.44	2 18 59.8	19 8.9	9.07393	9.8923	2.57	+2.86	6 22 44.4
8.0	23 51 57.45	51 56.42	2 0 15.8	0 22.6	9.07353	9.8925	2.55		7 22 43.3
8.9	23 54 47.94	54 47.24	1 41 31.5	41 36.1	9.07314	9.8925	2.53		8 22 42.2
9.9	23 57 38.27	57 37.91	1 22 47.2	22 49.6	9.07274	9.8925	2.51	-2.68	9 22 41.1
10.9	0 0 28.45	0 28.43	1 4 3.0	4 3.2	9.07237	9.8924	2.48	3.08	10 22 40.0
11.9	0 3 18.49	3 18.81	0 45 19.0	45 17.0	9.07205	9.8923	2.45	3.28	11 22 38.9
12.9	0 6 8.42	6 9.07	0 26 35.5	26 31.2	9.07177	9.8920	2.42	3.33	12 22 37.8
13.9	0 8 58.24	8 59.23	- 0 7 52.8	7 46.3	9.07150	9.8917	2.39	3.38	13 22 36.7
14.9	0 11 47.96	11 49.29	+ 0 10 49.0	10 57.7	9.07125	9.8913	2.35	3.43	14 22 35.6
15.9	0 14 37.58	14 39.24	0 20 29.8	29 40.7	9.07099	9.8909	2.32	3.53	15 22 34.5
16.9	0 17 27.10	17 29.10	0 48 9.4	48 22.5	9.07075	9.8904	-2.28	3.58	16 22 33.4
17.9	0 20 16.53	20 18.86	1 6 47.4	7 2.8	9.07053	9.8898		3.62	17 22 32.3
18.9	0 23 5.88	23 8.54	1 25 23.8	25 41.4	9.07034	9.8891		3.67	18 22 31.2
19.9	0 25 55.16	25 58.15	1 43 58.5	44 18.3	9.07016	9.8884		3.72	19 22 30.1
20.9	0 28 44.37	28 47.70	2 2 31.3	2 53.2	9.06998	9.8876		3.76	20 22 29.0
21.9	0 31 33.51	31 37.17	2 21 1.8	21 25.8	9.06981	9.8867		3.80	21 22 27.8
22.9	0 34 22.59	34 26.57	2 39 29.9	39 56.0	9.06967	9.8857		3.83	22 22 26.7
23.9	0 37 11.62	37 15.93	2 57 55.5	58 23.8	9.06955	9.8847		3.86	23 22 25.6
24.9	0 40 0.61	40 5.25	3 16 18.4	16 48.7	9.06945	9.8836		3.89	24 22 24.5
25.9	0 42 49.56	42 54.53	3 34 38.4	35 10.7	9.06935	9.8824		3.91	25 22 23.3
26.9	0 45 38.47	45 43.76	3 52 55.2	53 29.6	9.06926	9.8811		3.93	26 22 22.2
27.9	0 48 27.35	48 32.97	4 11 8.8	11 45.2	9.06919	9.8798		3.95	27 22 21.1
28.9	0 51 16.21	51 22.16	4 29 19.0	29 57.4	9.06915	9.8784		3.97	28 22 20.0
29.9	0 54 5.06	54 11.33	4 47 25.6	48 5.9	9.06913	9.8769		3.98	29 22 18.8
30.9	0 56 53.90	57 0.50	+ 5 5 28.3	6 10.6	+9.06910	+9.8753		-3.99	30 22 17.7

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.			Apparent Declination.			Log of α .		Log of δ .		Mean Solar Time of Meridian Transit.
	At Sidereal Oh.	At Transit.		At Sidereal Oh.	At Transit.		In R.A.	In Dec.	In R.A.	In Dec.	
May	d	h m s	m s	+ ° ' "	' "		+9.06910	+9.8737		-3.99	d h m
	1.9	0 59 42.73	59 49.67	5 23 27.0	24 11.3						1 22 16.6
	2.9	1 2 31.57	2 38.85	5 41 21.7	42 8.0		9.06915	9.8720		4.01	2 22 15.5
	3.9	1 5 20.44	5 28.03	5 59 12.1	60 0.3		9.06923	9.8703		4.02	3 22 14.3
	4.9	1 8 9.34	8 17.26	6 16 58.3	17 48.3		9.06933	9.8685		4.04	4 22 13.2
	5.9	1 10 58.20	11 6.54	6 34 39.8	35 31.7		9.06945	9.8666		4.06	5 22 12.1
	6.9	1 13 47.28	13 55.86	6 52 16.7	53 10.4		9.06955	9.8646		4.08	6 22 11.0
	7.9	1 16 36.31	16 45.23	7 9 48.6	10 44.1		9.06967	9.8626		4.09	7 22 9.8
	8.9	1 19 25.39	19 34.65	7 27 15.5	28 12.8		9.06981	9.8605		4.11	8 22 8.7
	9.9	1 22 14.53	22 24.13	7 44 37.3	45 36.4		9.06998	9.8583		4.12	9 22 7.6
	10.9	1 25 3.74	25 13.68	8 1 53.7	2 54.5		9.07017	9.8560	+2.28	4.14	10 22 6.5
	11.9	1 27 53.03	28 3.31	8 19 4.7	20 7.2		9.07037	9.8537	2.31	4.15	11 22 5.4
	12.9	1 30 42.40	30 53.02	8 36 10.0	37 14.1		9.07059	9.8412	2.33	4.16	12 22 4.3
	13.9	1 33 31.86	33 42.81	8 53 9.4	54 15.2		9.07082	9.8487	2.36	4.17	13 22 3.2
	14.9	1 36 21.41	36 32.70	9 10 2.9	11 10.3		9.07105	9.8461	2.38	4.18	14 22 2.1
	15.8	1 39 11.05	39 22.68	9 26 50.4	27 59.3		9.07130	9.8435	2.39	4.19	15 22 1.0
	16.8	1 42 0.79	42 12.77	9 43 31.7	44 42.1		9.07155	9.8408	2.40	4.20	16 21 59.9
	17.8	1 44 50.63	45 2.95	10 0 6.7	1 18.6		9.07181	9.8380	2.41	4.21	17 21 58.8
	18.8	1 47 40.57	47 53.24	10 16 35.0	17 48.4		9.07206	9.8350	2.42	4.22	18 21 57.7
	19.8	1 50 30.61	50 43.63	10 32 56.5	34 11.4		9.07234	9.8320	2.42	4.23	19 21 56.6
	20.8	1 53 20.77	53 34.13	10 49 11.1	50 27.3		9.07264	9.8289	2.42	4.24	20 21 55.5
June	21.8	1 56 11.04	56 24.74	11 5 18.6	6 36.2		9.07293	9.8257	2.42	4.25	21 21 54.4
	22.8	1 59 1.43	59 15.47	11 21 18.9	22 37.8		9.07321	9.8224	2.42	4.26	22 21 53.3
	23.8	2 1 51.92	2 6.30	11 37 11.9	38 32.1		9.07348	9.8190	2.43	4.26	23 21 52.2
	24.8	2 4 42.52	4 57.25	11 52 57.4	54 18.8		9.07377	9.8155	2.44	4.27	24 21 51.1
	25.8	2 7 33.24	7 48.31	12 8 35.2	9 57.8		9.07406	9.8120	2.45	4.27	25 21 50.0
	26.8	2 10 24.07	10 39.49	12 24 5.3	25 29.0		9.07436	9.8083	2.46	4.28	26 21 48.9
	27.8	2 13 15.03	13 30.80	12 39 27.5	40 52.3		9.07469	9.8046	2.47	4.28	27 21 47.8
	28.8	2 16 6.11	16 22.24	12 54 41.7	56 7.5		9.07502	9.8007	2.48	4.29	28 21 46.7
	29.8	2 18 57.33	19 13.81	13 9 47.7	11 14.5		9.07537	9.7968	2.49	4.30	29 21 45.6
	30.8	2 21 48.69	22 5.52	13 24 45.5	26 13.2		9.07571	9.7927	2.50	4.31	30 21 44.5
	31.8	2 24 40.18	24 57.36	13 39 34.7	41 3.3		9.07606	9.7885	2.51	4.31	31 21 43.5
	1.8	2 27 31.81	27 49.35	13 54 15.3	55 44.8		9.07639	9.7842	2.53	4.32	1 21 42.4
	2.8	2 30 23.57	30 41.47	14 8 47.3	10 17.6		9.07675	9.7799	2.54	4.33	2 21 41.3
	3.8	2 33 15.48	33 33.74	14 23 10.5	24 41.6		9.07713	9.7755	2.56	4.34	3 21 40.2
	4.8	2 36 7.54	36 26.16	14 37 24.9	38 56.7		9.07753	9.7710	2.56	4.34	4 21 39.2
	5.8	2 38 59.76	39 18.74	14 51 30.2	53 2.7		9.07791	9.7664	2.56	4.35	5 21 38.1
	6.8	2 41 52.13	42 11.47	15 5 26.4	6 59.5		9.07830	9.7616	2.56	4.35	6 21 37.1
	7.8	2 44 44.65	45 4.35	15 19 13.3	20 47.1		9.07867	9.7566	2.56	4.36	7 21 36.0
	8.8	2 47 37.33	47 57.39	15 32 50.9	34 25.2		9.07907	9.7516	2.56	4.36	8 21 35.0
	9.8	2 50 30.16	50 50.59	15 46 19.0	47 53.7		9.07946	9.7464	2.56	4.36	9 21 33.9
	10.8	2 53 23.15	53 43.95	15 59 37.5	61 12.6		9.07986	9.7412	2.56	4.37	10 21 32.9
	11.8	2 56 16.30	56 37.46	16 12 46.3	14 21.9		9.08025	9.7359	2.56	4.37	11 21 31.8
	12.8	2 59 9.60	59 31.12	16 25 45.3	27 21.4		9.08063	9.7304	2.55	4.37	12 21 30.8
	13.8	3 2 3.05	2 24.94	16 38 34.5	40 10.9		9.08100	9.7248	2.53	4.38	13 21 29.7
	14.8	3 4 56.65	5 18.91	16 51 13.7	52 50.2		9.08136	9.7190	2.52	4.38	14 21 28.7
	15.8	3 7 50.39	8 13.02	17 3 42.5	5 19.2		9.08173	9.7131	2.50	4.39	15 21 27.6
	16.8	3 10 44.28	11 7.28	17 16 1.0	17 37.9		9.08208	9.7070	2.49	4.39	16 21 26.6
	17.8	3 13 38.30	14 1.67	17 28 9.3	29 46.3		9.08240	9.7008	2.48	4.40	17 21 25.5
	18.8	3 16 32.45	16 56.19	17 40 7.2	41 44.2		9.08271	9.6945	2.47	4.40	18 21 24.5
	19.8	3 19 26.72	19 50.83	17 51 54.6	53 31.5		9.08302	9.6880	2.46	4.41	19 21 23.5
	20.8	3 22 21.12	22 45.60	18 3 31.3	5 8.1		9.08334	9.6813	2.44	4.41	20 21 22.5
	21.8	3 25 15.64	25 40.49	18 14 57.3	16 34.0		9.08365	9.6745	2.42	4.41	21 21 21.4
	22.7	3 28 10.29	28 35.50	18 26 12.5	27 49.0		9.08393	9.6675	2.40	4.42	22 21 20.4
	23.7	3 31 5.04	31 30.62	18 37 16.6	38 52.9		9.08419	9.6603	2.38	4.42	23 21 19.4
	24.7	3 33 59.90	34 25.85	18 48 9.6	49 45.6		9.08445	9.6529	2.36	4.42	24 21 18.4
	25.7	3 36 54.86	37 21.18	18 58 51.6	60 27.2		9.08469	9.6453	2.35	4.43	25 21 17.3
	26.7	3 39 49.91	40 16.60	19 9 22.4	10 57.6		9.08491	9.6376	2.34	4.43	26 21 16.3
	27.7	3 42 45.05	43 12.12	19 19 41.9	21 16.7		9.08514	9.6297	2.33	4.44	27 21 15.3
	28.7	3 45 40.28	46 7.72	19 29 50.1	31 24.3		9.08536	9.6216	2.33	4.44	28 21 14.3
	29.7	3 48 35.60	49 3.41	19 39 46.9	41 20.6		9.08558	9.6133	2.28	4.44	29 21 13.3
	30.7	3 51 31.01	51 59.19	19 49 32.3	51 5.3		9.08579	9.6048	+2.28	4.44	30 21 12.3
	31.7	3 54 26.49	54 55.06	+19 59 6.1	60 38.5		+9.08599	+9.5960		-4.44	1 21 11.3

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of G.		Log of b.		Mean Solar Time of Meridian Transit.
	At Sidereal Oh.	At Transit.	At Sidereal Oh.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
July	d	h m s	m s	° ' "					d h m
	1.7	3 54 26.49	54 55.06	+19 59 6.1	60 38.5	+9.08599	+9.5960		-4.44 1 21 11.3
	2.7	3 57 22.06	57 50.99	20 8 28.4	10 0.0	9.08616	9.5871	4.44	2 21 10.3
	3.7	4 0 17.70	0 47.00	20 17 39.1	19 9.8	9.08635	9.5778	4.44	3 21 9.3
	4.7	4 3 13.41	3 43.08	20 26 38.1	28 7.9	9.08652	9.5684	4.44	4 21 8.3
	5.7	4 6 9.18	6 39.22	20 35 25.3	36 54.2	9.08666	9.5586	4.45	5 21 7.3
	6.7	4 9 5.01	9 35.42	20 44 0.8	45 28.7	9.08679	9.5489	4.45	6 21 6.3
	7.7	4 12 0.89	12 31.67	20 52 24.5	53 51.3	9.08693	9.5386	4.45	7 21 5.3
	8.7	4 14 56.83	15 27.97	21 0 36.2	2 2.0	9.08704	9.5280	4.45	8 21 4.3
	9.7	4 17 52.80	18 24.31	21 8 36.0	10 0.7	9.08712	9.5172	4.46	9 21 3.3
	10.7	4 20 48.80	21 20.67	21 16 23.9	17 47.4	9.08718	9.5061	4.46	10 21 2.3
	11.7	4 23 44.82	24 17.06	21 23 59.7	25 22.0	9.08724	9.4947	4.46	11 21 1.3
	12.7	4 26 40.87	27 13.47	21 31 23.6	32 44.5	9.08729	9.4830	4.46	12 21 0.3
	13.7	4 29 36.93	30 9.88	21 38 35.5	39 55.0	9.08729	9.4708	4.47	13 20 59.3
	14.7	4 32 32.98	33 6.28	21 45 35.3	46 53.4	9.08724	9.4583	4.47	14 20 58.3
	15.7	4 35 29.00	36 2.66	21 52 22.9	53 39.6	9.08717	9.4454	4.47	15 20 57.3
	16.7	4 38 24.99	38 59.01	21 58 58.4	60 13.5	9.08709	9.4321	4.47	16 20 56.3
	17.7	4 41 20.95	41 55.32	22 5 21.8	6 35.3	9.08699	9.4184	4.47	17 20 55.3
	18.7	4 44 16.86	44 51.58	22 11 33.1	12 44.9	9.08687	9.4041	4.47	18 20 54.3
	19.7	4 47 12.71	47 47.78	22 17 32.1	18 42.2	9.08671	9.3892	-2.28 4.47	19 20 53.3
	20.7	4 50 8.50	50 43.91	22 23 18.8	24 27.1	9.08652	9.3737	2.33 4.47	20 20 52.3
	21.7	4 53 4.21	53 39.95	22 28 53.1	29 59.6	9.08631	9.3578	2.38 4.47	21 20 51.3
	22.7	4 55 59.82	56 35.90	22 34 15.2	35 19.9	9.08607	9.3413	2.42 4.47	22 20 50.3
	23.7	4 58 55.33	59 31.75	22 39 25.1	40 27.9	9.08579	9.3243	2.46 4.47	23 20 49.3
	24.7	5 1 50.72	2 27.48	22 44 22.8	45 23.7	9.08551	9.3065	2.50 4.47	24 20 48.3
	25.7	5 4 46.00	5 23.08	22 49 8.4	50 7.3	9.08520	9.2869	2.53 4.47	25 20 47.3
	26.7	5 7 41.14	8 18.55	22 53 41.8	54 38.6	9.08485	9.2685	2.55 4.47	26 20 46.2
	27.7	5 10 36.14	11 13.88	22 58 2.9	58 57.6	9.08450	9.2483	2.57 4.47	27 20 45.2
	28.6	5 13 31.00	14 9.06	23 2 11.8	3 4.4	9.08414	9.2270	2.59 4.47	28 20 44.2
	29.6	5 16 25.71	17 4.08	23 6 8.6	6 59.0	9.08375	9.2048	2.61 4.47	29 20 43.2
	30.6	5 19 20.25	19 58.94	23 9 53.2	10 41.3	9.08334	9.1811	2.63 4.47	30 20 42.1
Aug.	31.6	5 22 14.63	22 53.63	23 13 25.6	14 11.4	9.08291	9.1564	2.65 4.47	31 20 41.1
	1.6	5 25 8.83	25 48.14	23 16 45.9	17 29.5	9.08245	9.1302	2.67 4.46	1 20 40.1
	2.6	5 28 2.84	28 42.46	23 19 54.3	20 35.5	9.08196	9.1027	2.68 4.46	2 20 39.1
	3.6	5 30 56.65	31 36.57	23 22 50.7	23 29.5	9.08146	9.0730	2.70 4.46	3 20 38.0
	4.6	5 33 50.26	34 30.47	23 25 35.0	26 11.4	9.08094	9.0411	2.72 4.45	4 20 36.9
	5.6	5 36 43.65	37 24.16	23 28 7.3	28 41.2	9.08043	8.9070	2.74 4.45	5 20 35.9
	6.6	5 39 36.81	40 17.62	23 30 27.7	30 59.1	9.07981	8.9704	2.76 4.45	6 20 34.9
	7.6	5 42 29.75	43 10.85	23 32 36.3	33 5.2	9.07922	8.9308	2.78 4.44	7 20 33.8
	8.6	5 45 22.44	46 3.83	23 34 33.3	34 59.6	9.07858	8.8875	2.80 4.44	8 20 32.7
	9.6	5 48 14.87	48 56.54	23 36 18.6	36 42.3	9.07791	8.8395	2.82 4.44	9 20 31.7
	10.6	5 51 7.03	51 48.97	23 37 52.3	38 13.4	9.07722	8.7859	2.84 4.44	10 20 30.7
	11.6	5 53 58.91	54 41.12	23 39 14.5	39 32.8	9.07649	8.7242	2.86 4.44	11 20 29.6
	12.6	5 56 50.49	57 32.97	23 40 25.0	40 40.6	9.07573	8.6525	2.88 4.44	12 20 28.6
	13.6	5 59 41.77	60 24.51	23 41 23.9	41 36.8	9.07493	8.5675	2.90 4.44	13 20 27.5
	14.6	6 2 32.72	3 15.72	23 42 11.4	42 21.5	9.07404	8.4608	2.92 4.43	14 20 26.4
	15.6	6 5 23.34	6 6.59	23 42 47.5	42 54.8	9.07322	8.3252	2.94 4.43	15 20 25.3
	16.6	6 8 13.61	8 57.11	23 43 12.3	43 16.7	9.07232	8.1238	2.95 4.43	16 20 24.2
	17.6	6 11 3.52	11 47.27	23 43 25.8	43 27.4	9.07139	+7.7420	2.96 4.42	17 20 23.1
	18.6	6 13 53.06	14 37.05	23 43 28.2	43 26.9	9.07041	-7.3330	2.97 4.42	18 20 22.0
	19.6	6 16 42.21	17 26.43	23 43 19.6	43 15.4	9.06941	7.9908	2.98 4.42	19 20 20.9
	20.6	6 19 30.97	20 15.41	23 43 0.0	42 52.9	9.06838	8.2413	2.99 4.41	20 20 19.8
	21.6	6 22 19.32	23 3.99	23 42 29.4	42 19.4	9.06732	8.3979	3.00 4.41	21 20 18.7
	22.6	6 25 7.26	25 52.14	23 41 48.0	41 35.1	9.06624	8.5114	3.01 4.41	22 20 17.6
	23.6	6 27 54.77	28 39.86	23 40 55.9	40 40.1	9.06512	8.5998	3.02 4.40	23 20 16.4
	24.6	6 30 41.85	31 27.14	23 39 53.4	39 34.6	9.06398	8.6725	3.03 4.40	24 20 15.2
	25.6	6 33 28.48	34 13.97	23 38 40.4	38 18.7	9.06281	8.7343	3.03 4.40	25 20 14.0
	26.6	6 36 14.66	37 0.34	23 37 17.2	36 52.5	9.06162	8.7873	3.04 4.39	26 20 12.8
	27.6	6 39 0.38	39 46.25	23 35 43.7	35 16.0	9.06041	8.8357	3.05 4.39	27 20 11.6
	28.6	6 41 45.64	42 31.70	23 33 59.9	33 29.2	9.05919	8.8783	3.06 4.38	28 20 10.4
	29.6	6 44 30.43	45 16.67	23 32 6.1	31 32.3	9.05794	8.9164	3.07 4.38	29 20 9.2
	30.6	6 47 14.74	48 1.15	23 30 2.3	29 25.5	9.05667	8.9509	3.08 4.37	30 20 8.0
	31.6	6 49 58.57	50 45.15	+23 27 48.7	27 8.9	+9.05537	-8.9829	-3.08 -4.37	31 20 6.8

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of α .		Log of δ .		Mean Solar Time of Meridian Transit.	
	At Sidereal Oh.	At Transit.	At Sidereal Oh.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.		
Sep.	d	h m s	m s	° ' "	° ' "				d h m	
1.6	6 52 41.90	53 28.64	+23 25 25.4	24 42.5	+9.05401	-9.0120	-3.09	-4.36	1 20 5.6	
2.6	6 55 24.71	56 11.62	23 22 52.5	22 6.5	9.05264	9.0393	3.09	4.35	2 20 4.4	
3.5	6 58 7.01	58 54.08	23 20 10.1	19 21.1	9.05126	9.0644	3.10	4.34	3 20 3.2	
4.5	7 0 48.79	1 36.01	23 17 18.3	16 26.3	9.04985	9.0841	3.10	4.34	4 20 1.9	
5.5	7 3 30.04	4 17.40	23 14 17.3	13 22.2	9.04841	9.1101	3.11	4.33	5 20 0.7	
6.5	7 6 10.75	6 58.25	23 11 7.1	10 9.0	9.04695	9.1309	3.12	4.33	6 19 59.4	
7.5	7 8 50.92	9 38.55	23 7 48.0	6 46.9	9.04547	9.1503	3.13	4.32	7 19 58.2	
8.5	7 11 30.54	12 18.29	23 4 20.0	3 15.9	9.04396	9.1687	3.14	4.32	8 19 56.9	
9.5	7 14 9.60	14 57.46	22 60 43.3	59 36.2	9.04239	9.1859	3.15	4.31	9 19 55.6	
10.5	7 16 48.07	17 36.05	22 56 58.1	55 48.0	9.04078	9.2023	3.16	4.30	10 19 54.3	
11.5	7 19 25.95	20 14.03	22 53 4.4	51 51.4	9.03914	9.2178	3.17	4.29	11 19 53.0	
12.5	7 22 3.23	22 51.40	22 49 2.5	47 46.6	9.03747	9.2325	3.17	4.29	12 19 51.7	
13.5	7 24 39.90	25 28.16	22 44 52.5	43 33.6	9.03575	9.2465	3.18	4.28	13 19 50.4	
14.5	7 27 15.94	28 4.29	22 40 34.4	39 12.6	9.03400	9.2599	3.19	4.27	14 19 49.0	
15.5	7 29 51.35	30 39.78	22 36 8.5	34 43.7	9.03222	9.2726	3.20	4.26	15 19 47.7	
16.5	7 32 26.12	33 14.62	22 31 34.9	30 7.2	9.03040	9.2847	3.20	4.25	16 19 46.3	
17.5	7 35 0.23	35 48.80	22 26 53.7	25 23.2	9.02853	9.2964	3.21	4.24	17 19 44.9	
18.5	7 37 33.68	38 22.31	22 22 5.0	20 31.7	9.02666	9.3075	3.21	4.23	18 19 43.5	
19.5	7 40 6.46	40 55.14	22 17 9.1	15 33.1	9.02474	9.3178	3.21	4.21	19 19 42.1	
20.5	7 42 38.56	43 27.29	22 12 6.2	10 27.4	9.02280	9.3278	3.22	4.20	20 19 40.7	
21.5	7 45 9.98	45 58.76	22 6 56.5	5 14.9	9.02085	9.3375	3.22	4.19	21 19 39.3	
22.5	7 47 40.72	48 29.54	21 61 39.9	59 55.6	9.01884	9.3466	3.22	4.18	22 19 37.9	
23.5	7 50 10.75	50 59.61	21 56 16.5	54 29.5	9.01682	9.3557	3.23	4.17	23 19 36.5	
24.5	7 52 40.09	53 28.97	21 50 46.6	48 56.9	9.01478	9.3641	3.23	4.17	24 19 35.0	
25.5	7 55 8.72	55 57.61	21 45 10.5	43 18.2	9.01269	9.3721	3.24	4.16	25 19 33.6	
26.5	7 57 36.63	58 25.55	21 39 28.3	37 33.4	9.01059	9.3797	3.24	4.15	26 19 32.1	
27.5	8 0 3.83	0 52.77	21 33 40.1	31 42.7	9.00850	9.3870	3.24	4.14	27 19 30.6	
28.5	8 2 30.32	3 19.26	21 27 46.1	25 46.2	9.00636	9.3941	3.24	4.13	28 19 29.1	
29.5	8 4 56.08	5 45.02	21 21 46.4	19 43.9	9.00419	9.4008	3.24	4.11	29 19 27.6	
30.5	8 7 21.11	8 10.04	21 15 41.1	13 36.0	9.00199	9.4074	3.24	4.10	30 19 26.1	
Oct.	1.5	8 9 45.40	10 34.33	21 9 30.5	7 23.0	8.99975	9.4135	3.24	4.08	1 19 24.6
2.5	8 12 8.94	12 57.85	21 3 14.8	1 4.9	8.99751	9.4192	3.25	4.07	2 19 23.0	
3.5	8 14 31.75	15 20.64	20 56 54.3	54 42.1	8.99527	9.4250	3.26	4.06	3 19 21.5	
4.5	8 16 53.82	17 42.68	20 50 28.8	48 14.3	8.99298	9.4305	3.27	4.05	4 19 19.9	
5.5	8 19 15.13	20 3.96	20 43 58.3	41 41.7	8.99061	9.4357	3.28	4.03	5 19 18.3	
6.5	8 21 35.66	22 24.44	20 37 23.3	35 4.6	8.98817	9.4405	3.28	4.01	6 19 16.7	
7.5	8 23 55.39	24 44.12	20 30 44.2	28 23.4	8.98573	9.4450	3.29	3.99	7 19 15.1	
8.5	8 26 14.33	27 3.00	20 24 0.9	21 38.1	8.98322	9.4493	3.29	3.97	8 19 13.5	
9.5	8 28 32.47	29 21.07	20 17 13.8	14 49.0	8.98067	9.4533	3.29	3.94	9 19 11.9	
10.4	8 30 49.79	31 38.33	20 10 23.0	7 56.3	8.97809	9.4572	3.29	3.92	10 19 10.2	
11.4	8 33 6.30	33 54.76	20 3 23.6	1 0.1	8.97548	9.4608	3.30	3.89	11 19 8.5	
12.4	8 35 21.98	36 10.35	19 56 30.8	54 0.5	8.97281	9.4643	3.30	3.87	12 19 6.8	
13.4	8 37 36.82	38 25.09	19 49 30.0	46 58.0	8.97009	9.4674	3.31	3.84	13 19 5.1	
14.4	8 39 50.81	40 38.98	19 42 26.2	39 52.5	8.96730	9.4703	3.31	3.80	14 19 3.4	
15.4	8 42 3.93	42 52.00	19 35 19.5	32 44.2	8.96446	9.4730	3.32	3.75	15 19 1.7	
16.4	8 44 16.18	45 4.14	19 28 10.3	25 33.4	8.96152	9.4755	3.32	3.71	16 18 59.9	
17.4	8 46 27.55	47 15.38	19 20 58.7	18 20.3	8.95866	9.4778	3.33	3.66	17 18 58.2	
18.4	8 48 38.03	49 25.72	19 13 44.9	11 5.0	8.95568	9.4799	3.33	3.61	18 18 56.4	
19.4	8 50 47.61	51 35.16	19 6 29.2	3 47.8	8.95263	9.4819	3.33	3.56	19 18 54.6	
20.4	8 52 56.27	53 43.67	18 59 11.5	56 28.9	8.94953	9.4836	3.33	3.51	20 18 52.8	
21.4	8 55 4.01	55 51.26	18 51 52.1	49 8.4	8.94640	9.4851	3.34	3.46	21 18 51.0	
22.4	8 57 10.83	57 57.92	18 44 31.4	41 46.6	8.94325	9.4864	3.34	3.37	22 18 49.2	
23.4	8 59 16.73	60 3.65	18 37 9.5	34 23.7	8.94008	9.4874	3.35	3.27	23 18 47.4	
24.4	9 1 21.72	2 8.46	18 29 46.6	26 59.8	8.93686	9.4883	3.36	3.18	24 18 45.5	
25.4	9 3 25.76	4 12.32	18 22 22.9	19 35.2	8.93354	9.4890	3.37	3.08	25 18 43.7	
26.4	9 5 28.85	6 15.23	18 14 58.5	12 9.9	8.93015	9.4896	3.37	-2.86	26 18 41.8	
27.4	9 7 30.97	8 17.17	18 7 33.6	4 44.3	8.92670	9.4900	3.37		27 18 39.9	
28.4	9 9 32.12	10 18.13	17 60 8.4	57 18.4	8.92322	9.4902	3.38	+2.68	28 18 38.0	
29.4	9 11 32.30	12 18.10	17 52 43.1	49 52.5	8.91970	9.4901	3.38	3.08	29 18 36.1	
30.4	9 13 31.50	14 17.08	17 45 18.0	42 26.9	8.91611	9.4898	3.38	3.17	30 18 34.1	
31.4	9 15 29.71	16 15.06	17 37 53.4	35 1.8	8.91243	9.4894	3.39	3.27	31 18 32.2	
32.4	9 17 26.92	18 12.04	+17 30 29.2	27 37.3	+8.90875	-9.4888	-3.39	+3.36	32 18 30.2	

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of a.		Log of b.		Mean Solar Time of Meridian Transit.
	At Sidereal Oh.	At Transit.	At Sidereal Oh.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
Nov. 1.4	d h m s	m s	° ' "	° ' "					d h m
2.4	9 17 26.92	18 12.04	+17 30 29.2	27 37.3	+8.90875	-9.4888	-3.39	+3.36	1 18 30.2
3.4	9 19 23.13	20 8.02	17 23 5.9	20 13.8	8.90497	9.4879	3.40	3.46	2 18 28.2
4.4	9 21 18.32	22 2.96	17 15 43.5	12 51.3	8.90105	9.4869	3.40	3.52	3 18 26.2
5.4	9 23 12.45	23 56.84	17 8 22.3	5 30.0	8.89703	9.4855	3.41	3.59	4 18 24.2
6.4	9 25 5.53	25 49.64	16 61 2.5	58 10.3	8.89297	9.4840	3.41	3.66	5 18 22.1
7.4	9 26 57.54	27 41.36	16 53 44.5	50 52.4	8.88876	9.4821	3.42	3.72	6 18 20.1
8.4	9 28 48.45	29 31.98	16 46 28.4	43 36.6	8.88443	9.4801	3.42	3.77	7 18 18.0
9.4	9 30 38.25	31 21.48	16 39 14.5	36 23.2	8.88000	9.4778	3.43	3.81	8 18 15.9
10.4	9 32 26.92	33 9.83	16 32 2.9	29 12.2	8.87545	9.4754	3.44	3.85	9 18 13.7
11.4	9 34 14.44	34 57.03	16 24 54.0	22 3.8	8.87080	9.4725	3.45	3.89	10 18 11.5
12.4	9 36 0.81	36 43.05	16 17 48.0	14 58.6	8.86604	9.4694	3.45	3.92	11 18 9.3
13.4	9 37 46.00	38 27.89	16 10 45.2	7 56.5	8.86111	9.4660	3.46	3.95	12 18 7.1
14.4	9 39 29.98	40 11.50	16 3 45.8	0 58.0	8.85601	9.4624	3.47	3.98	13 18 4.9
15.3	9 41 12.73	41 53.87	15 56 50.0	54 3.2	8.85079	9.4585	3.48	4.00	14 18 2.7
16.3	9 42 54.24	43 34.99	15 49 58.0	47 12.4	8.84547	9.4543	3.48	4.02	15 18 0.4
17.3	9 44 34.50	45 14.86	15 43 10.2	40 25.8	8.84001	9.4498	3.49	4.05	16 17 58.1
18.3	9 46 13.49	46 53.43	15 36 26.7	33 43.7	8.83439	9.4450	3.49	4.07	17 17 55.8
19.3	9 47 51.19	48 30.70	15 29 47.8	27 6.2	8.82861	9.4399	3.50	4.10	18 17 53.5
20.3	9 49 27.58	50 6.66	15 23 13.6	20 33.7	8.82267	9.4345	3.50	4.12	19 17 51.2
21.3	9 51 2.64	51 41.28	15 16 44.6	14 6.4	8.81654	9.4287	3.51	4.14	20 17 48.8
22.3	9 52 36.35	53 14.53	15 10 20.8	7 44.5	8.81026	9.4226	3.52	4.16	21 17 46.4
23.3	9 54 8.70	54 46.41	15 4 2.6	1 28.3	8.80382	9.4160	3.53	4.17	22 17 44.0
24.3	9 55 39.67	56 16.90	14 57 50.2	55 18.1	8.79716	9.4091	3.53	4.19	23 17 41.6
25.3	9 57 9.23	57 45.97	14 51 43.9	49 14.0	8.79032	9.4017	3.54	4.20	24 17 39.1
26.3	9 58 37.38	59 13.61	14 45 43.9	43 16.4	8.78333	9.3939	3.55	4.22	25 17 36.6
27.3	10 0 4.10	0 39.81	14 39 50.6	37 25.3	8.77609	9.3856	3.56	4.23	26 17 34.1
28.3	10 1 29.36	2 4.53	14 34 4.1	31 41.3	8.76852	9.3769	3.56	4.25	27 17 31.6
29.3	10 2 53.11	3 27.73	14 28 24.6	26 4.6	8.76067	9.3678	3.57	4.26	28 17 29.0
30.3	10 4 15.34	4 49.40	14 22 52.3	20 35.2	8.75258	9.3580	3.57	4.28	29 17 26.4
31.3	10 5 36.03	6 9.53	14 17 27.8	15 13.6	8.74424	9.3476	3.58	4.29	30 17 23.8
Dec. 1.3	10 6 55.16	7 28.08	14 12 11.2	10 0.2	8.73562	9.3365	3.59	4.31	1 17 21.2
2.3	10 8 12.71	8 45.00	14 7 2.8	4 55.0	8.72685	9.3248	3.60	4.32	2 17 18.6
3.3	10 9 28.63	10 0.27	13 62 2.8	59 58.5	8.71719	9.3123	3.61	4.34	3 17 15.9
4.3	10 10 42.88	11 13.87	13 57 11.7	55 10.9	8.70731	9.2989	3.62	4.35	4 17 13.2
5.3	10 11 55.42	12 25.74	13 52 29.7	50 32.6	8.69698	9.2846	3.62	4.37	5 17 10.5
6.3	10 13 6.22	13 35.85	13 47 57.1	46 3.8	8.68618	9.2694	3.63	4.38	6 17 7.8
7.3	10 14 15.24	14 44.18	13 43 34.2	41 44.9	8.67488	9.2531	3.64	4.40	7 17 5.0
8.3	10 15 22.45	15 50.66	13 39 21.3	37 36.1	8.66309	9.2357	3.65	4.41	8 17 2.2
9.3	10 16 27.82	16 55.27	13 35 18.7	33 37.8	8.65066	9.2169	3.65	4.43	9 16 59.3
10.3	10 17 31.29	17 57.97	13 31 26.7	29 50.4	8.63759	9.1966	3.66	4.44	10 16 56.4
11.3	10 18 32.84	18 58.73	13 27 45.8	26 14.0	8.62390	9.1748	3.67	4.45	11 16 53.5
12.3	10 19 32.43	19 57.51	13 24 16.0	22 49.0	8.60961	9.1524	3.68	4.46	12 16 50.6
13.3	10 20 30.03	20 54.27	13 20 57.7	19 35.7	8.59434	9.1257	3.69	4.47	13 16 47.6
14.3	10 21 25.60	21 48.96	13 17 51.3	16 34.4	8.57820	9.0977	3.70	4.48	14 16 44.5
15.3	10 22 19.07	22 41.57	13 14 57.0	14 45.3	8.56114	9.0673	3.71	4.49	15 16 41.4
16.3	10 23 10.44	23 32.06	13 12 15.0	11 8.8	8.54321	9.0336	3.72	4.49	16 16 38.3
17.3	10 23 59.67	24 20.37	13 9 45.8	8 45.1	8.52400	8.9961	3.72	4.50	17 16 35.2
18.3	10 24 46.70	25 6.46	13 7 29.6	6 34.4	8.50364	8.9544	3.73	4.51	18 16 32.0
19.3	10 25 31.51	25 50.30	13 5 26.5	4 36.9	8.48187	8.9078	3.74	4.53	19 16 28.8
20.3	10 26 14.06	26 31.89	13 3 36.7	2 53.1	8.45864	8.8543	3.75	4.53	20 16 25.6
21.3	10 26 54.31	27 11.17	13 2 0.6	1 23.2	8.43382	8.7910	3.75	4.54	21 16 22.3
22.3	10 27 32.25	27 48.10	13 0 38.7	0 7.4	8.40696	8.7155	3.76	4.54	22 16 19.0
23.3	10 28 7.82	28 22.64	12 59 31.0	59 5.9	8.37776	8.6230	3.77	4.55	23 16 15.6
24.3	10 28 40.98	28 54.75	12 58 37.8	58 18.6	8.34591	8.5039	3.78	4.56	24 16 12.2
25.3	10 29 11.69	29 24.39	12 57 59.1	57 46.6	8.31096	8.3358	3.78	4.56	25 16 8.8
26.3	10 29 39.91	29 51.51	12 57 35.4	57 29.5	8.27228	8.0498	3.79	4.57	26 16 5.3
27.3	10 30 5.60	30 16.08	12 57 26.8	57 27.6	8.22903	-6.8194	3.79	4.57	27 16 1.8
28.3	10 30 28.71	30 38.07	12 57 33.5	57 41.2	8.18030	+8.0045	3.80	4.58	28 15 58.2
29.3	10 30 49.22	30 57.43	12 57 55.9	58 10.6	8.12460	8.3238	3.80	4.58	29 15 54.6
30.3	10 31 7.08	31 14.12	12 58 34.2	58 55.8	8.05952	8.5072	3.81	4.59	30 15 50.9
31.3	10 31 22.25	31 28.10	12 59 28.5	59 57.0	7.96168	8.6361	3.82	4.59	31 15 47.2
32.3	10 31 34.69	31 39.33	+13 0 38.8	1 14.1	+7.88540	+8.7357	-3.83	+4.59	32 15 43.5

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.				Apparent Declination.				Log of α .		Log of δ .		Mean Solar Time of Meridian Transit.		
	At Sidereal Oh.		At Transit.		At Sidereal Oh.		At Transit.		In R.A.	In Dec.	In R.A.	In Dec.			
Jan.	d	h	m	s	m	s	o	46	46	48			d	h	m
	0.2	22	28	4.08	28	1.40	-10	46	31.9	46	48.0	+8.4652	+9.2409	+2.96	+3.78
	1.2	22	28	46.31	28	43.62	10	42	19.9	42	35.9	8.4688	9.2451	2.96	3.78
	2.2	22	29	28.91	29	26.22	10	38	5.3	38	21.3	8.4727	9.2491	2.95	3.77
	3.2	22	30	11.86	30	9.17	10	33	48.4	34	4.4	8.4763	9.2532	2.94	3.77
	4.2	22	30	55.16	30	52.47	10	29	29.2	29	45.3	8.4798	9.2570	2.93	3.76
	5.2	22	31	38.80	31	36.11	10	25	7.6	25	23.7	8.4832	9.2610	2.92	3.75
	6.2	22	32	22.78	32	20.09	10	20	43.7	20	59.8	8.4865	9.2650	2.91	3.75
	7.2	22	33	7.09	33	4.40	10	16	17.5	16	33.6	8.4897	9.2686	2.90	3.74
	8.2	22	33	51.72	33	49.04	10	11	49.1	12	5.2	8.4928	9.2722	2.89	3.74
	9.2	22	34	36.67	34	33.99	10	7	18.5	7	34.6	8.4958	9.2755	2.88	3.73
	10.2	22	35	21.92	35	19.25	10	2	45.8	3	1.8	8.4988	9.2791	2.87	3.72
	11.2	22	36	7.48	36	4.81	9	58	10.9	58	26.9	8.5017	9.2825	2.86	3.72
	12.2	22	36	53.33	36	50.67	9	53	33.9	53	49.9	8.5045	9.2856	2.85	3.71
	13.2	22	37	39.48	37	36.83	9	48	54.9	49	10.9	8.5072	9.2890	2.84	3.71
	14.2	22	38	25.92	38	23.28	9	44	13.8	44	29.8	8.5098	9.2920	2.83	3.70
	15.2	22	39	12.64	39	10.01	9	39	30.7	39	46.6	8.5123	9.2951	2.82	3.70
	16.2	22	39	59.64	39	57.02	9	34	45.6	35	1.5	8.5148	9.2980	2.81	3.69
	17.2	22	40	46.90	40	44.29	9	29	58.6	30	14.5	8.5172	9.3010	2.80	3.68
	18.2	22	41	34.42	41	31.82	9	25	9.6	25	25.4	8.5196	9.3039	2.79	3.68
	19.2	22	42	22.20	42	19.61	9	20	18.8	20	34.6	8.5219	9.3067	2.78	3.67
	20.2	22	43	10.23	43	7.66	9	15	26.1	15	41.8	8.5242	9.3094	2.76	3.66
	21.2	22	43	58.51	43	55.95	9	10	31.5	10	47.1	8.5264	9.3121	2.75	3.66
	22.2	22	44	47.03	44	44.49	9	5	35.1	5	50.6	8.5285	9.3147	2.74	3.65
	23.2	22	45	35.79	45	33.26	9	0	37.0	0	52.5	8.5306	9.3173	2.72	3.65
	24.2	22	46	24.77	46	22.26	8	55	37.2	55	52.6	8.5326	9.3197	2.71	3.64
25.2	22	47	13.97	47	11.48	8	50	35.8	50	51.1	8.5345	9.3220	2.69	3.63	
26.2	22	48	3.38	48	0.91	8	45	32.7	45	47.9	8.5363	9.3243	2.68	3.62	
27.1	22	48	52.99	48	50.54	8	40	28.0	40	43.1	8.5381	9.3266	2.66	3.61	
28.1	22	49	42.80	49	40.37	8	35	21.8	35	36.8	8.5398	9.3288	2.65	3.60	
29.1	22	50	32.81	50	30.40	8	30	14.0	30	28.9	8.5415	9.3309	2.64	3.59	
30.1	22	51	23.01	51	20.62	8	25	4.7	25	19.5	8.5431	9.3330	2.62	3.58	
31.1	22	52	13.39	52	11.02	8	19	54.0	20	8.7	8.5446	9.3351	2.61	3.57	
Feb.	1.1	22	53	3.94	53	1.59	8	14	41.8	14	56.3	8.5461	9.3371	2.59	3.56
	2.1	22	53	54.66	53	52.33	8	9	28.2	9	42.6	8.5475	9.3390	2.58	3.55
	3.1	22	54	45.54	54	43.23	8	4	13.3	4	27.5	8.5489	9.3407	2.56	3.54
	4.1	22	55	36.58	55	34.29	7	58	57.1	59	11.2	8.5502	9.3424	2.55	3.53
	5.1	22	56	27.77	56	25.51	7	53	39.6	53	53.6	8.5515	9.3441	2.53	3.52
	6.1	22	57	19.11	57	16.87	7	48	20.9	48	34.8	8.5527	9.3458	2.52	3.51
	7.1	22	58	10.59	58	8.38	7	43	1.0	43	14.7	8.5539	9.3474	2.50	3.50
	8.1	22	59	2.20	59	0.01	7	37	39.9	37	53.5	8.5551	9.3490	2.48	3.48
	9.1	22	59	53.95	59	51.79	7	32	17.7	32	31.2	8.5562	9.3506	2.46	3.46
	10.1	23	0	45.83	0	43.69	7	26	54.4	27	7.8	8.5572	9.3521	2.45	3.45
	11.1	23	1	37.83	1	35.72	7	21	30.1	21	43.3	8.5582	9.3535	2.43	3.43
	12.1	23	2	29.95	2	27.86	7	16	4.7	16	17.8	8.5591	9.3548	2.42	3.42
	13.1	23	3	22.19	3	20.13	7	10	38.2	10	51.1	8.5600	9.3562	2.40	3.40
	14.1	23	4	14.54	4	12.51	7	5	10.7	5	23.4	8.5609	9.3575	2.38	3.38
	15.1	23	5	7.00	5	5.00	6	59	42.2	59	54.7	8.5618	9.3588	2.36	3.36
	16.1	23	5	59.56	5	57.58	6	54	12.8	54	25.2	8.5626	9.3599	2.34	3.34
	17.1	23	6	52.21	6	50.26	6	48	42.6	48	54.8	8.5634	9.3610	2.32	3.32
	18.1	23	7	44.95	7	43.03	6	43	11.5	43	23.5	8.5641	9.3620	2.30	3.30
	19.1	23	8	37.78	8	35.89	6	37	39.6	37	51.5	8.5648	9.3630	2.28	3.28
	20.1	23	9	30.69	9	28.83	6	32	6.8	32	18.5	8.5655	9.3640	2.26	3.26
	21.1	23	10	23.68	10	21.85	6	26	33.3	26	44.8	8.5661	9.3650	2.24	3.25
	22.1	23	11	16.74	11	14.94	6	20	59.1	21	10.4	8.5667	9.3660	2.22	3.22
	23.1	23	12	9.86	12	8.09	6	15	24.3	15	35.4	8.5672	9.3669	2.19	3.19
	24.1	23	13	3.04	13	1.30	6	9	48.9	9	59.9	8.5677	9.3678	2.16	3.16
	25.1	23	13	56.28	13	54.57	6	4	12.8	4	23.6	8.5681	9.3686	2.13	3.13
	26.1	23	14	49.56	14	47.88	5	58	36.1	58	46.7	8.5684	9.3694	2.10	3.10
27.1	23	15	42.89	15	41.24	5	52	58.9	53	9.3	8.5687	9.3700	2.06	3.06	
28.1	23	16	36.26	16	34.64	5	47	21.3	47	31.5	8.5690	9.3705	2.02	3.02	
29.1	23	17	29.66	17	28.07	5	41	43.2	41	53.2	8.5692	9.3709	1.99	2.98	
30.1	23	18	23.08	18	21.52	-5	36	4.7	36	14.5	+8.5694	+9.3713	+1.93	+2.93	

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.			Apparent Declination.			Log of α .		Log of δ .		Mean Solar Time of Meridian Transit.
	At Sidereal Oh.	At Transit.		At Sidereal Oh.	At Transit.		In R.A.	In Dec.	In R.A.	In Dec.	
Mar. d	b m s	m s		° ' "	' "						d h m
1.1	23 18 23.08	18 21.52		5 36 4.7	36 14.5	+8.5694	+9.3713	+1.93	+2.93		1 0 39.1
2.1	23 19 16.53	19 15.01		5 30 25.9	30 35.5	8.5696	9.3717	+1.86	+2.86		2 0 36.0
3.1	23 20 10.01	20 8.52		5 24 46.7	24 56.1	8.5698	9.3721				3 0 33.0
4.0	23 21 3.50	21 2.04		5 19 7.2	19 16.4	8.5699	9.3725				4 0 30.0
5.0	23 21 57.00	21 55.57		5 13 27.5	13 36.5	8.5700	9.3729				5 0 26.9
6.0	23 22 50.51	22 49.12		5 7 47.5	7 56.3	8.5701	9.3732				6 0 23.9
7.0	23 23 44.03	23 42.67		5 2 7.3	2 15.9	8.5701	9.3734				7 0 20.8
8.0	23 24 37.54	24 36.21		4 56 26.9	56 35.3	8.5701	9.3736				8 0 17.8
9.0	23 25 31.04	25 29.74		4 50 46.4	50 54.6	8.5700	9.3738				9 0 14.8
10.0	23 26 24.54	26 23.28		4 45 5.8	45 13.8	8.5699	9.3739				10 0 11.7
11.0	23 27 18.02	27 16.79		4 39 25.1	39 32.9	8.5698	9.3740				11 0 8.7
12.0	23 28 11.49	28 10.30		4 33 44.4	33 52.0	8.5696	9.3740				12 0 5.6
13.0	23 29 4.94	29 3.78		4 28 3.7	28 11.1	8.5694	9.3740				13 0 2.6
14.0	23 29 58.37	29 57.25		4 22 23.0	22 30.2	8.5692	9.3740				13 23 59.6
15.0	23 30 51.78	30 50.69		4 16 42.4	16 49.4	8.5690	9.3739				14 23 56.5
16.0	23 31 45.16	31 44.11		4 11 1.9	11 8.7	8.5687	9.3738	-1.86			15 23 53.5
17.0	23 32 38.51	32 37.49		4 5 21.5	5 28.1	8.5684	9.3736	1.96			16 23 50.4
18.0	23 33 31.81	33 30.83		3 59 41.2	59 47.5	8.5681	9.3734	2.04			17 23 47.4
19.0	23 34 25.07	34 24.12		3 54 1.0	54 7.1	8.5678	9.3732	2.11			18 23 44.3
20.0	23 35 18.28	35 17.37		3 48 21.1	48 27.0	8.5674	9.3728	2.16	-2.86		19 23 41.3
21.0	23 36 11.43	36 10.55		3 42 41.5	42 47.2	8.5670	9.3723	2.20	2.92		20 23 38.2
22.0	23 37 4.53	37 3.69		3 37 2.2	37 7.6	8.5665	9.3718	2.23	2.97		21 23 35.2
23.0	23 37 57.56	37 56.75		3 31 23.2	31 28.4	8.5660	9.3714	2.25	3.01		22 23 32.1
24.0	23 38 50.53	38 49.75		3 25 44.5	25 49.5	8.5654	9.3709	2.27	3.05		23 23 29.1
25.0	23 39 43.43	39 42.68		3 20 6.3	20 11.1	8.5648	9.3705	2.29	3.09		24 23 26.0
26.0	23 40 36.25	40 35.54		3 14 28.6	14 33.1	8.5641	9.3700	2.31	3.13		25 23 23.0
27.0	23 41 28.99	41 28.31		3 8 51.4	8 55.7	8.5634	9.3693	2.33	3.16		26 23 19.9
28.0	23 42 21.64	42 20.99		3 3 14.6	3 18.7	8.5627	9.3685	2.35	3.19		27 23 16.9
29.0	23 43 14.20	43 13.59		2 57 38.4	57 42.3	8.5620	9.3677	2.37	3.21		28 23 13.8
30.0	23 44 6.66	44 6.08		2 52 2.9	52 6.6	8.5612	9.3669	2.38	3.23		29 23 10.7
31.0	23 44 59.02	44 58.47		2 46 28.0	46 31.5	8.5603	9.3660	2.40	3.25		30 23 7.7
Apr. 1.0	23 45 51.28	45 50.76		2 40 53.8	40 57.1	8.5594	9.3651	2.41	3.27		31 23 4.6
2.0	23 46 43.43	46 42.94		2 35 20.3	35 23.4	8.5584	9.3641	2.43	3.29		1 23 1.6
3.0	23 47 35.47	47 35.02		2 29 47.5	29 50.4	8.5574	9.3631	2.44	3.31		2 22 58.5
4.0	23 48 27.40	48 26.98		2 24 15.5	24 18.2	8.5564	9.3621	2.46	3.33		3 22 55.4
5.0	23 49 19.21	49 18.82		2 18 44.4	18 46.9	8.5554	9.3610	2.47	3.35		4 22 52.4
6.0	23 50 10.89	50 10.53		2 13 14.1	13 16.4	8.5544	9.3599	2.49	3.37		5 22 49.3
7.0	23 51 2.45	51 2.13		2 7 44.6	7 46.7	8.5533	9.3587	2.50	3.39		6 22 46.2
8.0	23 51 53.88	51 53.59		2 2 16.0	2 17.9	8.5522	9.3575	2.52	3.41		7 22 43.1
8.9	23 52 45.18	52 44.92		1 56 48.3	56 50.0	8.5511	9.3562	2.53	3.43		8 22 40.1
9.9	23 53 36.34	53 36.11		1 51 21.6	51 23.1	8.5500	9.3549	2.55	3.44		9 22 37.0
10.9	23 54 27.36	54 27.17		1 45 55.9	45 57.2	8.5488	9.3534	2.56	3.45		10 22 33.9
11.9	23 55 18.24	55 18.08		1 40 31.2	40 32.3	8.5476	9.3521	2.58	3.46		11 22 30.8
12.9	23 56 8.98	56 8.85		1 35 7.5	35 8.4	8.5463	9.3507	2.59	3.47		12 22 27.7
13.9	23 56 59.57	56 59.47		1 29 44.9	29 45.6	8.5450	9.3493	2.61	3.48		13 22 24.6
14.9	23 57 50.00	57 49.93		1 24 23.4	24 23.9	8.5436	9.3478	2.62	3.49		14 22 21.5
15.9	23 58 40.27	58 40.23		1 19 3.1	19 3.4	8.5422	9.3463	2.63	3.50		15 22 18.4
16.9	23 59 30.37	59 30.36		1 13 44.0	13 44.1	8.5407	9.3447	2.64	3.51		16 22 15.3
17.9	0 0 20.30	0 20.32		1 8 26.2	8 26.1	8.5392	9.3430	2.65	3.52		17 22 12.2
18.9	0 1 10.06	1 10.10		1 3 9.6	3 9.3	8.5376	9.3412	2.66	3.53		18 22 9.1
19.9	0 1 59.63	1 59.70		0 57 54.3	57 53.8	8.5359	9.3393	2.67	3.54		19 22 6.0
20.9	0 2 49.01	2 49.11		0 52 40.4	52 39.7	8.5342	9.3373	2.68	3.55		20 22 3.0
21.9	0 3 38.20	3 38.33		0 47 27.9	47 27.0	8.5325	9.3353	2.69	3.56		21 21 59.9
22.9	0 4 27.20	4 27.35		0 42 16.8	42 15.8	8.5307	9.3333	2.70	3.57		22 21 56.8
23.9	0 5 16.00	5 16.17		0 37 7.2	37 6.0	8.5289	9.3312	2.71	3.57		23 21 53.7
24.9	0 6 4.59	6 4.79		0 31 59.1	31 57.7	8.5270	9.3291	2.72	3.58		24 21 50.5
25.9	0 6 52.97	6 53.19		0 26 52.5	26 50.9	8.5251	9.3269	2.73	3.59		25 21 47.3
26.9	0 7 41.13	7 41.38		0 21 47.5	21 45.8	8.5231	9.3246	2.74	3.59		26 21 44.2
27.9	0 8 29.07	8 29.35		0 16 44.1	16 42.2	8.5211	9.3222	2.75	3.60		27 21 41.1
28.9	0 9 16.78	9 17.08		0 11 42.3	11 40.2	8.5191	9.3198	2.76	3.61		28 21 37.9
29.9	0 10 4.27	10 4.60		0 6 42.2	6 40.0	8.5170	9.3174	2.77	3.61		29 21 34.8
30.9	0 10 51.52	10 51.87		0 1 43.8	1 41.5	+8.5149	+9.3150	-2.79	-3.62		30 21 31.6

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of α .		Log of δ .		Mean Solar Time of Meridian Transit.
	At Sidereal Oh.	At Transit.	At Sidereal Oh.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
May	d h m s	m s	° ' "	' "					d h m
1.9	0 11 38.53	11 38.90	+ 0 3 12.8	3 15.3	+8.5127	+9.3125	-2.78	-3.63	1 21 28.5
2.9	0 12 25.30	12 25.70	0 8 7.6	8 10.2	8.5104	9.3099	2.79	3.63	2 21 25.3
3.9	0 13 11.83	13 12.25	0 13 0.6	13 3.3	8.5081	9.3072	2.80	3.64	3 21 22.2
4.9	0 13 58.10	13 58.55	0 17 51.8	17 54.6	8.5057	9.3045	2.80	3.65	4 21 19.1
5.9	0 14 44.12	14 44.59	0 22 41.1	22 44.1	8.5033	9.3017	2.81	3.65	5 21 16.0
6.9	0 15 29.88	15 30.37	0 27 28.6	27 31.7	8.5008	9.2988	2.82	3.66	6 21 12.8
7.9	0 16 15.38	16 15.89	0 32 14.1	32 17.3	8.4983	9.2958	2.82	3.67	7 21 9.6
8.9	0 17 0.61	17 1.14	0 36 57.6	37 0.9	8.4957	9.2927	2.83	3.68	8 21 6.4
9.9	0 17 45.57	17 46.12	0 41 39.2	41 42.7	8.4931	9.2896	2.84	3.68	9 21 3.2
10.9	0 18 30.26	18 30.83	0 46 18.8	46 22.4	8.4904	9.2864	2.84	3.69	10 21 0.0
11.9	0 19 14.67	19 15.26	0 50 56.2	50 59.9	8.4877	9.2831	2.85	3.70	11 20 56.8
12.9	0 19 58.78	19 59.38	0 55 31.5	55 35.3	8.4849	9.2798	2.86	3.70	12 20 53.6
13.9	0 20 42.60	20 43.22	1 0 4.7	0 8.6	8.4820	9.2764	2.86	3.71	13 20 50.4
14.9	0 21 26.13	21 26.76	1 4 35.7	4 39.7	8.4790	9.2729	2.87	3.72	14 20 47.2
15.8	0 22 9.35	22 10.00	1 9 4.5	9 8.6	8.4759	9.2693	2.88	3.72	15 20 44.0
16.8	0 22 52.26	22 52.92	1 13 31.1	13 35.3	8.4738	9.2656	2.88	3.73	16 20 40.8
17.8	0 23 34.86	23 35.54	1 17 55.4	17 59.7	8.4694	9.2618	2.89	3.74	17 20 37.5
18.8	0 24 17.14	24 17.83	1 22 17.3	22 21.7	8.4660	9.2579	2.90	3.74	18 20 34.3
19.8	0 24 59.09	24 59.80	1 26 36.9	26 41.4	8.4624	9.2539	2.90	3.75	19 20 31.1
20.8	0 25 40.71	25 41.43	1 30 54.1	30 58.6	8.4588	9.2498	2.91	3.76	20 20 27.9
21.8	0 26 21.99	26 22.73	1 35 8.8	35 13.4	8.4552	9.2456	2.92	3.76	21 20 24.6
22.8	0 27 2.91	27 3.66	1 39 21.0	39 25.7	8.4515	9.2411	2.92	3.77	22 20 21.4
23.8	0 27 43.48	27 44.25	1 43 30.6	43 35.4	8.4477	9.2366	2.93	3.78	23 20 18.2
24.8	0 28 23.69	28 24.47	1 47 37.7	47 42.5	8.4438	9.2320	2.94	3.78	24 20 14.9
25.8	0 29 3.53	29 4.33	1 51 42.2	51 47.1	8.4398	9.2274	2.94	3.79	25 20 11.6
26.8	0 29 43.01	29 43.82	1 55 44.0	55 49.0	8.4357	9.2225	2.95	3.80	26 20 8.3
27.8	0 30 22.11	30 22.93	1 59 43.1	59 48.2	8.4316	9.2176	2.96	3.80	27 20 5.0
28.8	0 31 0.83	31 1.66	2 3 39.5	3 44.6	8.4274	9.2127	2.97	3.81	28 20 1.7
29.8	0 31 39.17	31 40.01	2 7 33.3	7 38.5	8.4231	9.2077	2.97	3.82	29 19 58.4
30.8	0 32 17.12	32 17.97	2 11 24.3	11 29.5	8.4187	9.2024	2.98	3.82	30 19 55.1
31.8	0 32 54.68	32 55.54	2 15 12.4	15 17.7	8.4141	9.1971	2.99	3.83	31 19 51.8
June									
1.8	0 33 31.84	33 32.70	2 18 57.7	19 3.0	8.4093	9.1916	2.99	3.84	1 19 48.5
2.8	0 34 8.59	34 9.46	2 22 40.2	22 45.5	8.4044	9.1860	3.00	3.84	2 19 45.2
3.8	0 34 44.93	34 45.81	2 26 19.8	26 25.2	8.3995	9.1805	3.01	3.85	3 19 41.9
4.8	0 35 20.86	35 21.75	2 29 56.5	30 1.9	8.3945	9.1744	3.01	3.86	4 19 38.5
5.8	0 35 56.37	35 57.26	2 33 30.2	33 35.6	8.3894	9.1683	3.02	3.86	5 19 35.2
6.8	0 36 31.46	36 32.36	2 37 0.9	37 6.3	8.3842	9.1621	3.03	3.87	6 19 31.9
7.8	0 37 6.12	37 7.03	2 40 28.6	40 34.1	8.3788	9.1557	3.03	3.87	7 19 28.5
8.8	0 37 40.33	37 41.24	2 43 53.2	43 58.7	8.3732	9.1493	3.04	3.88	8 19 25.1
9.8	0 38 14.09	38 15.01	2 47 14.7	47 20.2	8.3674	9.1425	3.05	3.88	9 19 21.8
10.8	0 38 47.39	38 48.31	2 50 33.0	50 38.5	8.3614	9.1355	3.05	3.89	10 19 18.4
11.8	0 39 20.23	39 21.15	2 53 48.1	53 53.6	8.3551	9.1283	3.06	3.89	11 19 15.0
12.8	0 39 52.62	39 53.54	2 57 0.0	57 5.4	8.3486	9.1211	3.07	3.90	12 19 11.6
13.8	0 40 24.54	40 25.45	3 0 8.7	0 14.1	8.3420	9.1136	3.07	3.90	13 19 8.2
14.8	0 40 55.98	40 56.89	3 3 14.1	3 19.5	8.3353	9.1055	3.08	3.91	14 19 4.8
15.8	0 41 26.94	41 27.84	3 6 16.1	6 21.5	8.3285	9.0978	3.08	3.91	15 19 1.4
16.8	0 41 57.40	41 58.30	3 9 14.8	9 20.1	8.3216	9.0896	3.09	3.92	16 18 57.9
17.8	0 42 27.36	42 28.25	3 12 10.1	12 15.4	8.3145	9.0808	3.09	3.92	17 18 54.5
18.8	0 42 56.81	42 57.69	3 15 1.9	15 7.1	8.3071	9.0720	3.10	3.93	18 18 51.0
19.8	0 43 25.74	43 26.62	3 17 50.2	17 55.4	8.2994	9.0633	3.10	3.93	19 18 47.5
20.8	0 43 54.15	43 55.02	3 20 35.0	20 40.1	8.2914	9.0538	3.11	3.94	20 18 44.1
21.7	0 44 22.03	44 22.89	3 23 16.2	23 21.2	8.2830	9.0441	3.11	3.94	21 18 40.6
22.7	0 44 49.38	44 50.23	3 25 53.8	25 58.7	8.2743	9.0341	3.12	3.94	22 18 37.1
23.7	0 45 16.18	45 17.03	3 28 27.8	28 32.7	8.2654	9.0237	3.12	3.95	23 18 33.6
24.7	0 45 42.44	45 43.28	3 30 58.1	31 2.9	8.2563	9.0134	3.13	3.95	24 18 30.1
25.7	0 46 8.15	46 8.98	3 33 24.7	33 29.4	8.2469	9.0021	3.13	3.95	25 18 26.6
26.7	0 46 33.30	46 34.12	3 35 47.5	35 52.1	8.2372	8.9908	3.14	3.96	26 18 23.1
27.7	0 46 57.89	46 58.70	3 38 6.6	38 11.2	8.2274	8.9789	3.14	3.96	27 18 19.6
28.7	0 47 21.91	47 22.71	3 40 21.9	40 26.4	8.2170	8.9668	3.15	3.96	28 18 16.0
29.7	0 47 45.36	47 46.15	3 42 33.4	42 37.8	8.2063	8.9543	3.15	3.97	29 18 12.5
30.7	0 48 8.23	48 9.00	3 44 41.1	44 45.4	8.1952	8.9409	3.16	3.97	30 18 9.0
31.7	0 48 30.51	48 31.27	+ 3 46 44.9	46 49.1	+8.1836	+8.9275	-3.16	-3.97	31 18 5.4

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of <i>a</i> .		Log of <i>b</i> .		Mean Solar Time of Meridian Transit.	
	At Sidereal Oh.	At Transit.	At Sidereal Oh.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.		
July	d	h m s	m s	+ ° ' "					d h m	
1.7	0 48 30.51	48 31.27	48 31.27	+ 3 46 44.9	46 49.1	+8.1836	+8.9275	-3.16	-3.97	1 18 5.4
2.7	0 48 52.21	48 52.95	48 52.95	3 48 44.8	48 48.9	8.1719	8.9135	3.16	3.98	2 18 1.9
3.7	0 49 13.31	49 14.04	49 14.04	3 50 40.7	50 44.7	8.1597	8.8985	3.17	3.98	3 17 58.3
4.7	0 49 33.81	49 34.52	49 34.52	3 52 32.7	52 36.6	8.1469	8.8830	3.17	3.98	4 17 54.7
5.7	0 49 53.70	49 54.39	49 54.39	3 54 20.7	54 24.5	8.1335	8.8669	3.17	3.99	5 17 51.1
6.7	0 50 12.97	50 13.65	50 13.65	3 56 4.7	56 8.4	8.1195	8.8502	3.18	3.99	6 17 47.5
7.7	0 50 31.62	50 32.28	50 32.28	3 57 44.7	57 48.3	8.1050	8.8324	3.18	3.99	7 17 43.9
8.7	0 50 49.65	50 50.30	50 50.30	3 59 20.5	59 24.0	8.0901	8.8138	3.18	4.00	8 17 40.3
9.7	0 51 7.05	51 7.68	51 7.68	4 0 52.2	0 55.6	8.0738	8.7944	3.19	4.00	9 17 36.7
10.7	0 51 23.81	51 24.42	51 24.42	4 2 19.8	2 23.1	8.0577	8.7741	3.19	4.00	10 17 33.0
11.7	0 51 39.93	51 40.52	51 40.52	4 3 43.3	3 46.5	8.0400	8.7517	3.19	4.01	11 17 29.3
12.7	0 51 55.39	51 55.96	51 55.96	4 5 2.5	5 5.5	8.0214	8.7287	3.20	4.01	12 17 25.6
13.7	0 52 10.19	52 10.74	52 10.74	4 6 17.5	6 20.4	8.0021	8.7043	3.20	4.01	13 17 21.9
14.7	0 52 24.33	52 24.86	52 24.86	4 7 28.2	7 31.0	7.9815	8.6779	3.20	4.02	14 17 18.2
15.7	0 52 37.80	52 38.31	52 38.31	4 8 34.6	8 37.2	7.9602	8.6498	3.21	4.02	15 17 14.5
16.7	0 52 50.60	52 51.09	52 51.09	4 9 36.7	9 39.1	7.9367	8.6198	3.21	4.02	16 17 10.8
17.7	0 53 2.71	53 3.18	53 3.18	4 10 34.5	10 36.8	7.9121	8.5867	3.21	4.02	17 17 7.1
18.7	0 53 14.13	53 14.57	53 14.57	4 11 27.9	11 30.0	7.8860	8.5509	3.22	4.02	18 17 3.4
19.7	0 53 24.86	53 25.27	53 25.27	4 12 16.8	12 18.8	7.8577	8.5118	3.22	4.02	19 16 59.6
20.7	0 53 34.89	53 35.27	53 35.27	4 13 1.3	13 3.1	7.8270	8.4690	3.22	4.03	20 16 55.8
21.7	0 53 44.22	53 44.58	53 44.58	4 13 41.4	13 43.1	7.7954	8.4208	3.23	4.03	21 16 52.0
22.7	0 53 52.86	53 53.19	53 53.19	4 14 17.1	14 18.6	7.7596	8.3666	3.23	4.03	22 16 48.2
23.7	0 54 0.79	54 1.10	54 1.10	4 14 48.3	14 49.6	7.7207	8.3040	3.23	4.03	23 16 44.4
24.7	0 54 8.01	54 8.29	54 8.29	4 15 15.0	15 16.1	7.6779	8.2306	3.24	4.03	24 16 40.6
25.7	0 54 14.52	54 14.78	54 14.78	4 15 37.2	15 38.2	7.6312	8.1426	3.24	4.03	25 16 36.8
26.7	0 54 20.32	54 20.55	54 20.55	4 15 55.0	15 55.8	7.5772	8.0319	3.24	4.03	26 16 33.0
27.7	0 54 25.40	54 25.61	54 25.61	4 16 8.3	16 8.9	7.5155	7.8830	3.24	4.03	27 16 29.2
28.6	0 54 29.76	54 29.94	54 29.94	4 16 17.0	16 17.4	7.4437	7.6545	3.24	4.03	28 16 25.3
29.6	0 54 33.40	54 33.56	54 33.56	4 16 21.3	16 21.6	7.3575	+7.1426	3.24	4.03	29 16 21.4
30.6	0 54 36.32	54 36.45	54 36.45	4 16 21.0	16 21.1	7.2498	-7.2395	3.24	4.03	30 16 17.5
31.6	0 54 38.52	54 38.62	54 38.62	4 16 16.2	16 16.1	7.1088	7.6867	3.24	4.03	31 16 13.6
Aug. 1.6	0 54 40.01	54 40.08	54 40.08	4 16 7.0	16 6.7	6.8947	7.9042	3.24	4.03	1 16 9.7
2.6	0 54 40.77	54 40.81	54 40.81	4 15 53.3	15 52.9	+6.4437	8.0484	3.24	4.03	2 16 5.8
3.6	0 54 40.81	54 40.82	54 40.82	4 15 35.0	15 34.4	-6.3979	8.1555	3.24	4.03	3 16 1.9
4.6	0 54 40.12	54 40.10	54 40.10	4 15 12.3	15 11.5	6.8710	8.2413	3.24	4.03	4 15 58.0
5.6	0 54 38.69	54 38.64	54 38.64	4 14 45.1	14 44.1	7.0969	8.3129	3.24	4.03	5 15 54.0
6.6	0 54 36.53	54 36.45	54 36.45	4 14 13.3	14 12.2	7.2447	8.3744	3.24	4.03	6 15 50.0
7.6	0 54 33.64	54 33.53	54 33.53	4 13 37.0	13 35.7	7.3548	8.4232	3.24	4.03	7 15 46.0
8.6	0 54 30.02	54 29.89	54 29.89	4 12 56.3	12 54.8	7.4426	8.4761	3.24	4.03	8 15 42.0
9.6	0 54 25.67	54 25.51	54 25.51	4 12 11.1	12 9.4	7.5155	8.5193	3.23	4.02	9 15 38.0
10.6	0 54 20.59	54 20.40	54 20.40	4 11 21.4	11 19.5	7.5764	8.5584	3.23	4.02	10 15 34.0
11.6	0 54 14.79	54 14.58	54 14.58	4 10 27.2	10 25.2	7.6319	8.5940	3.23	4.02	11 15 29.9
12.6	0 54 8.25	54 8.01	54 8.01	4 9 28.6	9 26.4	7.6811	8.6262	3.23	4.02	12 15 25.9
13.6	0 54 0.98	54 0.71	54 0.71	4 8 25.5	8 23.2	7.7241	8.6565	3.23	4.02	13 15 21.8
14.6	0 53 52.99	53 52.69	53 52.69	4 7 18.0	7 15.5	7.7622	8.6848	3.22	4.01	14 15 17.8
15.6	0 53 44.29	53 43.97	53 43.97	4 6 6.1	6 3.5	7.7992	8.7114	3.22	4.01	15 15 13.7
16.6	0 53 34.86	53 34.51	53 34.51	4 4 49.9	4 47.1	7.8328	8.7365	3.22	4.01	16 15 9.6
17.6	0 53 24.71	53 24.34	53 24.34	4 3 29.3	3 26.4	7.8628	8.7506	3.22	4.01	17 15 5.5
18.6	0 53 13.86	53 13.46	53 13.46	4 2 4.5	2 1.4	7.8908	8.7816	3.21	4.00	18 15 1.4
19.6	0 53 2.31	53 1.89	53 1.89	4 0 35.5	0 32.3	7.9171	8.8021	3.21	4.00	19 14 57.3
20.6	0 52 50.08	52 49.63	52 49.63	3 59 2.3	58 58.9	7.9420	8.8211	3.20	3.99	20 14 53.2
21.6	0 52 37.15	52 36.68	52 36.68	3 57 24.9	57 21.4	7.9645	8.8394	3.20	3.99	21 14 49.1
22.6	0 52 23.55	52 23.05	52 23.05	3 55 43.4	55 39.7	7.9859	8.8565	3.19	3.98	22 14 44.9
23.6	0 52 9.28	52 8.76	52 8.76	3 53 57.9	53 54.1	8.0060	8.8731	3.19	3.97	23 14 40.7
24.6	0 51 54.34	51 53.80	51 53.80	3 52 8.5	52 4.6	8.0263	8.8888	3.18	3.97	24 14 36.5
25.6	0 51 38.73	51 38.17	51 38.17	3 50 15.1	50 11.1	8.0438	8.9034	3.18	3.96	25 14 32.3
26.6	0 51 22.48	51 21.90	51 21.90	3 48 17.9	48 13.7	8.0612	8.9179	3.17	3.95	26 14 28.1
27.6	0 51 5.60	51 5.00	51 5.00	3 46 16.9	46 12.6	8.0751	8.9308	3.17	3.94	27 14 23.9
28.6	0 50 48.11	50 47.49	50 47.49	3 44 12.3	44 7.9	8.0913	8.9437	3.16	3.93	28 14 19.7
29.6	0 50 30.01	50 29.38	50 29.38	3 42 4.0	41 59.5	8.1066	8.9558	3.15	3.92	29 14 15.4
30.6	0 50 11.30	50 10.65	50 10.65	3 39 52.2	39 47.6	8.1208	8.9674	3.15	3.91	30 14 11.2
31.6	0 49 51.99	49 51.32	49 51.32	+ 3 37 37.0	37 32.3	-8.1339	-8.9786	-3.14	-3.90	31 14 6.9

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of a.		Log of b.		Mean Solar Time of Meridian Transit.
	At Sidereal Oh.	At Transit.	At Sidereal Oh.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
Sept. 1.6	d h m s	m s	+ 3 35 18.3	35 13.5	-8.1465	-8.9889	-3.13	-3.89	d h m
2.5	0 49 32.10	49 31.41	3 32 56.3	32 51.4	8.1584	8.9990	3.12	3.88	1 14 2.7
3.5	0 49 11.64	49 10.94	3 30 31.0	30 26.0	8.1695	9.0089	3.11	3.87	2 13 58.4
4.5	0 48 29.08	48 28.35	3 28 2.6	27 57.6	8.1807	9.0183	3.10	3.86	3 13 54.1
5.5	0 48 6.99	48 6.25	3 25 31.0	25 25.9	8.1914	9.0266	3.09	3.84	4 13 49.8
6.5	0 47 44.38	47 43.63	3 22 56.5	22 51.4	8.2009	9.0344	3.08	3.82	5 13 45.5
7.5	0 47 21.27	47 20.51	3 20 19.2	20 14.0	8.2101	9.0423	3.06	3.80	6 13 41.2
8.5	0 46 57.67	46 56.90	3 17 39.1	17 33.9	8.2193	9.0497	3.05	3.78	7 13 36.9
9.5	0 46 33.58	46 32.80	3 14 56.2	14 50.9	8.2277	9.0575	3.03	3.76	8 13 32.6
10.5	0 46 9.03	46 8.24	3 12 10.6	12 5.3	8.2359	9.0638	3.02	3.74	9 13 28.3
11.5	0 45 44.03	45 43.23	3 9 22.6	9 17.3	8.2433	9.0700	3.00	3.72	10 13 24.0
12.5	0 45 18.61	45 17.81	3 6 32.3	6 26.9	8.2501	9.0753	2.98	3.70	11 13 19.7
13.5	0 44 52.79	44 51.98	3 3 39.9	3 34.5	8.2569	9.0808	2.96	3.68	12 13 15.4
14.5	0 44 26.58	44 25.77	3 0 45.4	0 40.0	8.2632	9.0858	2.94	3.66	13 13 11.0
15.5	0 44 0.00	43 59.19	2 57 48.9	57 43.5	8.2692	9.0908	2.92	3.63	14 13 6.6
16.5	0 43 33.06	43 32.24	2 54 50.5	54 45.1	8.2748	9.0955	2.90	3.60	15 13 2.2
17.5	0 43 5.79	43 4.97	2 51 50.3	51 44.9	8.2800	9.0995	2.88	3.56	16 12 57.8
18.5	0 42 38.21	42 37.39	2 48 48.5	48 43.1	8.2846	9.1029	2.85	3.52	17 12 53.4
19.5	0 42 10.35	42 9.53	2 45 45.3	45 39.9	8.2886	9.1062	2.82	3.47	18 12 49.0
20.5	0 41 42.23	41 41.41	2 42 40.7	42 35.3	8.2927	9.1090	2.78	3.42	19 12 44.6
21.5	0 41 13.87	41 13.05	2 39 35.0	39 29.7	8.2963	9.1116	2.74	3.36	20 12 40.2
22.5	0 40 45.28	40 44.46	2 36 28.4	36 23.1	8.2995	9.1134	2.69	3.28	21 12 35.8
23.5	0 40 16.49	40 15.67	2 33 20.9	33 15.6	8.3022	9.1153	2.64	3.19	22 12 31.4
24.5	0 39 47.53	39 46.72	2 30 12.6	30 7.4	8.3047	9.1172	2.59	3.09	23 12 27.0
25.5	0 39 18.41	39 17.60	2 27 3.7	27 58.5	8.3070	9.1188	2.53	2.98	24 12 22.6
26.5	0 38 49.16	38 48.36	2 23 54.2	23 49.1	8.3089	9.1197	2.46	-2.85	25 12 18.2
27.5	0 38 19.79	38 18.99	2 20 44.4	20 39.3	8.3105	9.1200	2.38		26 12 13.8
28.5	0 37 50.33	37 49.54	2 17 34.5	17 29.5	8.3117	9.1202	2.28		27 12 9.3
29.5	0 37 20.79	37 20.01	2 14 24.7	14 19.8	8.3125	9.1200	-2.16		28 12 4.9
30.5	0 36 51.21	36 50.44	2 11 15.0	11 10.2	8.3128	9.1195			29 12 0.5
Oct. 1.5	0 36 21.61	36 20.85	2 8 5.6	8 0.8	8.3129	9.1188	+2.85		30 11 56.1
2.5	0 35 52.00	35 51.25	2 4 56.5	4 51.8	8.3129	9.1179	3.05		1 11 51.7
3.5	0 35 22.41	35 21.67	2 1 47.8	1 43.2	8.3128	9.1167	+2.16		2 11 47.3
4.5	0 34 52.85	34 52.13	1 58 39.8	58 35.3	8.3122	9.1150	2.28	3.30	3 11 42.8
5.5	0 34 23.35	34 22.64	1 55 32.6	55 28.1	8.3111	9.1130	2.38	3.38	4 11 38.3
6.5	0 33 53.93	33 53.23	1 52 26.4	52 22.0	8.3097	9.1102	2.46	3.45	5 11 33.8
7.5	0 33 24.62	33 23.93	1 49 21.4	49 17.1	8.3077	9.1071	2.53	3.51	6 11 29.4
8.5	0 32 55.44	32 54.77	1 46 17.7	46 13.5	8.3056	9.1043	2.61	3.56	7 11 25.0
9.4	0 32 26.40	32 25.74	1 43 15.3	43 11.2	8.3033	9.1009	2.66	3.60	8 11 20.6
10.4	0 31 57.53	31 56.88	1 40 14.4	40 10.4	8.3008	9.0971	2.70	3.64	9 11 16.2
11.4	0 31 28.85	31 28.21	1 37 15.2	37 11.3	8.2975	9.0927	2.74	3.67	10 11 11.8
12.4	0 31 0.40	30 59.78	1 34 17.9	34 14.1	8.2939	9.0883	2.78	3.70	11 11 7.4
13.4	0 30 32.19	30 31.58	1 31 22.5	31 18.8	8.2903	9.0831	2.81	3.72	12 11 3.0
14.4	0 30 3.23	30 3.64	1 28 29.2	28 25.6	8.2861	9.0781	2.84	3.74	13 10 58.6
15.4	0 29 36.55	29 35.97	1 25 38.0	25 34.5	8.2815	9.0720	2.87	3.76	14 10 54.2
16.4	0 29 9.17	29 8.61	1 22 49.2	22 45.8	8.2767	9.0659	2.90	3.78	15 10 49.8
17.4	0 28 42.12	28 41.57	1 20 2.9	19 59.6	8.2712	9.0591	2.92	3.80	16 10 45.4
18.4	0 28 15.42	28 14.89	1 17 19.3	17 16.1	8.2650	9.0514	2.95	3.81	17 10 41.0
19.4	0 27 49.10	27 48.59	1 14 38.6	14 35.5	8.2589	9.0441	2.97	3.83	18 10 36.7
20.4	0 27 23.16	27 22.67	1 12 0.7	11 57.7	8.2534	9.0358	2.99	3.85	19 10 32.3
21.4	0 26 57.63	26 57.15	1 9 25.8	9 22.9	8.2462	9.0274	3.01	3.86	20 10 28.0
22.4	0 26 32.53	26 32.07	1 6 54.0	6 51.2	8.2375	9.0183	3.03	3.88	21 10 23.6
23.4	0 26 7.88	26 7.43	1 4 25.5	4 22.8	8.2297	9.0087	3.05	3.89	22 10 19.2
24.4	0 25 43.68	25 43.25	1 2 0.3	1 57.7	8.2211	8.9984	3.07	3.91	23 10 14.8
25.4	0 25 19.96	25 19.54	0 59 38.5	59 36.0	8.2125	8.9880	3.09	3.92	24 10 10.5
26.4	0 24 56.73	24 56.33	0 57 20.3	57 17.9	8.2028	8.9764	3.10	3.93	25 10 6.2
27.4	0 24 34.02	24 33.63	0 55 5.8	55 3.5	8.1930	8.9645	3.11	3.94	26 10 1.9
28.4	0 24 11.83	24 11.45	0 52 55.0	52 52.8	8.1824	8.9519	3.12	3.95	27 9 57.6
29.4	0 23 50.18	23 49.81	0 50 48.0	50 45.9	8.1716	8.9392	3.13	3.96	28 9 53.3
30.4	0 23 29.08	23 28.73	0 48 44.8	48 42.8	8.1603	8.9254	3.14	3.97	29 9 49.0
31.4	0 23 8.54	23 8.20	0 46 45.6	46 43.7	8.1478	8.9106	3.15	3.98	30 9 44.7
32.4	0 22 48.59	22 48.27	+ 0 44 50.5	44 48.7	-8.1350	-8.8947	+3.16	+3.99	31 9 40.4
									32 9 36.2

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of α .		Log of δ .		Mean Solar Time of Meridian Transit.		
	At Sidereal Oh.	At Transit.	At Sidereal Oh.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.			
Nov. d	h m s	m s	+ ° ' " s	44 ' " s					d	h m	
1.4	0 22 48.50	22 48.27	+ 0 44 50.5	44 48.7	-8.1350	-8.8947	+3.16	+3.99	1	9 36.2	
2.4	0 22 29.23	22 28.92	0 42 59.6	42 57.9	8.1222	8.8783	3.17	4.00	2	9 31.9	
3.4	0 22 10.46	22 10.17	0 41 12.9	41 11.3	8.1078	8.8606	3.18	4.01	3	9 27.6	
4.4	0 21 52.31	21 52.03	0 39 30.5	39 29.0	8.0930	8.8424	3.19	4.01	4	9 23.4	
5.4	0 21 34.79	21 34.53	0 37 52.4	37 51.0	8.0771	8.8234	3.20	4.01	5	9 19.2	
6.4	0 21 17.91	21 17.66	0 36 18.7	36 17.4	8.0609	8.8030	3.20	4.02	6	9 15.0	
7.4	0 21 1.67	21 1.43	0 34 49.5	34 48.3	8.0430	8.7811	3.21	4.02	7	9 10.8	
8.4	0 20 46.10	20 45.87	0 33 24.8	33 23.7	8.0245	8.7581	3.21	4.03	8	9 6.6	
9.4	0 20 31.20	20 30.99	0 32 4.7	32 3.6	8.0048	8.7331	3.22	4.03	9	9 2.4	
10.4	0 20 16.97	20 16.77	0 30 49.1	30 48.1	7.9841	8.7061	3.22	4.03	10	8 58.2	
11.4	0 20 3.44	20 3.25	0 29 38.3	29 37.4	7.9612	8.6773	3.23	4.04	11	8 54.0	
12.4	0 19 50.62	19 50.45	0 28 32.3	28 31.5	7.9374	8.6457	3.24	4.04	12	8 49.9	
13.4	0 19 38.51	19 38.35	0 27 31.0	27 30.2	7.9121	8.6117	3.24	4.05	13	8 45.8	
14.4	0 19 27.11	19 26.96	0 26 34.5	26 33.8	7.8849	8.5740	3.25	4.05	14	8 41.7	
15.3	0 19 16.43	19 16.29	0 25 42.9	25 42.3	7.8548	8.5327	3.25	4.05	15	8 37.6	
16.3	0 19 6.49	19 6.36	0 24 56.3	24 55.8	7.8225	8.4870	3.25	4.06	16	8 33.5	
17.3	0 18 57.29	18 57.17	0 24 14.6	24 14.1	7.7876	8.4354	3.25	4.06	17	8 29.4	
18.3	0 18 48.83	18 48.72	0 23 37.8	23 37.4	7.7501	8.3769	3.26	4.06	18	8 25.3	
19.3	0 18 41.10	18 41.00	0 23 5.9	23 5.6	7.7085	8.3085	3.26	4.07	19	8 21.3	
20.3	0 18 34.12	18 34.03	0 22 39.2	22 39.0	7.6611	8.2272	3.26	4.07	20	8 17.2	
21.3	0 18 27.90	18 27.82	0 22 17.4	22 17.2	7.6085	8.1272	3.26	4.07	21	8 13.2	
22.3	0 18 22.44	18 22.37	0 22 0.6	22 0.5	7.5483	7.9969	3.26	4.07	22	8 9.2	
23.3	0 18 17.73	18 17.67	0 21 48.8	21 48.7	7.4781	7.9101	3.27	4.08	23	8 5.2	
24.3	0 18 13.78	18 13.73	0 21 42.0	21 42.0	7.3943	-7.4751	3.27	4.08	24	8 1.2	
25.3	0 18 10.59	18 10.55	0 21 40.2	21 40.2	7.2918	+6.6867	3.27	4.08	25	7 57.2	
26.3	0 18 8.15	18 8.12	0 21 43.5	21 43.5	7.1555	7.5975	3.27	4.08	26	7 53.2	
27.3	0 18 6.47	18 6.45	0 21 51.7	21 51.8	6.9555	7.8710	3.27	4.08	27	7 49.2	
28.3	0 18 5.55	18 5.54	0 22 4.9	22 5.0	-6.5740	8.0375	3.27	4.08	28	7 45.3	
29.3	0 18 5.39	18 5.38	0 22 23.0	22 23.2	+6.1840	8.1566	3.27	4.08	29	7 41.4	
30.3	0 18 5.99	18 5.99	0 22 46.1	22 46.3	6.8101	8.2498	3.27	4.08	30	7 37.5	
Dec. 1.3	0 18 7.34	18 7.35	0 23 14.2	23 14.5	7.0796	8.3266	3.26	4.08	1	7 33.6	
2.3	0 18 9.45	18 9.47	0 23 47.3	23 47.7	7.2361	8.3918	3.26	4.08	2	7 29.7	
3.3	0 18 12.31	18 12.34	0 24 25.2	24 25.7	7.3521	8.4480	3.26	4.08	3	7 25.8	
4.3	0 18 15.93	18 15.97	0 25 8.1	25 8.7	7.4437	8.4977	3.26	4.08	4	7 21.9	
5.3	0 18 20.30	18 20.35	0 25 55.9	25 56.5	7.5192	8.5423	3.26	4.08	5	7 18.0	
6.3	0 18 25.43	18 25.49	0 26 48.6	26 49.3	7.5820	8.5828	3.26	4.08	6	7 14.2	
7.3	0 18 31.30	18 31.37	0 27 46.1	27 46.8	7.6368	8.6198	3.25	4.07	7	7 10.4	
8.3	0 18 37.92	18 38.00	0 28 48.5	28 49.3	7.6867	8.6538	3.25	4.07	8	7 6.6	
9.3	0 18 45.29	18 45.38	0 29 55.7	29 56.5	7.7303	8.6848	3.25	4.07	9	7 2.8	
10.3	0 18 53.40	18 53.50	0 31 7.6	31 8.5	7.7700	8.7132	3.25	4.06	10	6 59.0	
11.3	0 19 2.25	19 2.36	0 32 24.2	32 25.2	7.8063	8.7398	3.25	4.06	11	6 55.2	
12.3	0 19 11.84	19 11.96	0 33 45.6	33 46.7	7.8399	8.7648	3.24	4.05	12	6 51.4	
13.3	0 19 22.17	19 22.30	0 35 11.8	35 12.9	7.8710	8.7885	3.24	4.05	13	6 47.6	
14.3	0 19 33.23	19 33.37	0 36 42.6	36 43.8	7.8989	8.8110	3.24	4.04	14	6 43.8	
15.3	0 19 45.01	19 45.17	0 38 18.1	38 19.4	7.9261	8.8319	3.24	4.04	15	6 40.1	
16.3	0 19 57.52	19 57.69	0 39 58.2	39 59.6	7.9509	8.8519	3.23	4.04	16	6 36.4	
17.3	0 20 10.74	20 10.92	0 41 42.8	41 44.3	7.9742	8.8710	3.23	4.03	17	6 32.7	
18.3	0 20 24.67	20 24.86	0 43 32.0	43 33.6	7.9963	8.8888	3.23	4.03	18	6 29.0	
19.3	0 20 39.31	20 39.52	0 45 25.7	45 27.4	8.0177	8.9057	3.22	4.03	19	6 25.3	
20.3	0 20 54.66	20 54.88	0 47 23.8	47 25.6	8.0367	8.9218	3.22	4.02	20	6 21.6	
21.2	0 21 10.70	21 10.93	0 49 26.3	49 28.2	8.0559	8.9374	3.22	4.02	21	6 17.9	
22.2	0 21 27.42	21 27.66	0 51 33.1	51 35.1	8.0735	8.9522	3.21	4.01	22	6 14.2	
23.2	0 21 44.82	21 45.08	0 53 44.3	53 46.4	8.0903	8.9665	3.21	4.01	23	6 10.6	
24.2	0 22 2.89	22 3.16	0 55 59.7	56 1.9	8.1066	8.9799	3.21	4.00	24	6 7.0	
25.2	0 22 21.63	22 21.92	0 58 19.3	58 21.5	8.1220	8.9929	3.20	4.00	25	6 3.4	
26.2	0 22 41.03	22 41.34	1 0 43.1	0 45.4	8.1370	9.0057	3.20	3.99	26	5 59.8	
27.2	0 23 1.09	23 1.42	1 3 11.0	3 13.4	8.1508	9.0177	3.19	3.99	27	5 56.2	
28.2	0 23 21.79	23 22.14	1 5 43.0	5 45.5	8.1662	9.0291	3.19	3.98	28	5 52.6	
29.2	0 23 43.13	23 43.50	1 8 18.9	8 21.5	8.1775	9.0404	3.18	3.98	29	5 49.0	
30.2	0 24 5.11	24 5.50	1 10 58.8	11 1.5	8.1897	9.0511	3.18	3.97	30	5 45.5	
31.2	0 24 27.71	24 28.13	1 13 42.7	13 45.5	8.2016	9.0615	3.17	3.97	31	5 41.9	
32.2	0 24 50.93	24 51.38	+ 1 16 30.4	16 33.3	+8.2133	+9.0711	+3.17	+3.96	32	5 38.4	

* FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of α .		Log of δ .		Mean Solar Time of Meridian Transit.
	At Sidereal Oh.	At Transit.	At Sidereal Oh.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
Jan. 0.2	d 15 59 14.26	m s 59 31.05	° 18 38 1.6	' 38 47.5	+8.2442	-8.682	-2.68	+3.38	d h m 0 21 17.4
1.2	15 59 39.43	59 56.10	18 39 10.4	39 55.7	8.2408	8.676	2.68	3.38	1 21 13.9
2.2	16 0 4.40	0 20.94	18 40 18.2	41 2.9	8.2373	8.670	2.69	3.38	2 21 10.4
3.2	16 0 29.17	0 45.58	18 41 25.1	42 9.1	8.2337	8.664	2.70	3.39	3 21 6.9
4.2	16 0 53.73	1 10.00	18 42 31.0	43 14.3	8.2299	8.657	2.71	3.39	4 21 3.3
5.2	16 1 18.07	1 34.20	18 43 35.9	44 18.6	8.2260	8.651	2.72	3.39	5 20 59.8
6.2	16 1 42.19	1 58.18	18 44 39.8	45 21.9	8.2220	8.644	2.73	3.39	6 20 56.3
7.2	16 2 6.09	2 21.94	18 45 42.7	46 24.2	8.2180	8.637	2.74	3.39	7 20 52.7
8.2	16 2 29.77	2 45.48	18 46 44.6	47 25.5	8.2139	8.630	2.75	3.40	8 20 49.2
9.2	16 2 53.22	3 8.78	18 47 45.5	48 25.8	8.2096	8.623	2.76	3.40	9 20 45.6
10.2	16 3 16.44	3 31.84	18 48 45.4	49 25.1	8.2052	8.615	2.77	3.40	10 20 42.1
11.2	16 3 39.41	3 54.65	18 49 44.3	50 23.3	8.2004	8.608	2.78	3.40	11 20 38.5
12.2	16 4 2.13	4 17.21	18 50 42.2	51 20.5	8.1956	8.601	2.79	3.40	12 20 35.0
13.2	16 4 24.60	4 39.52	18 51 39.2	52 16.8	8.1908	8.593	2.80	3.40	13 20 31.4
14.2	16 4 46.82	5 1.58	18 52 35.1	53 12.0	8.1858	8.585	2.81	3.41	14 20 27.8
15.2	16 5 8.78	5 23.37	18 53 29.9	54 6.1	8.1807	8.576	2.82	3.41	15 20 24.3
16.2	16 5 30.48	5 44.89	18 54 23.7	54 59.1	8.1754	8.568	2.83	3.41	16 20 20.7
17.2	16 5 51.91	6 6.14	18 55 16.4	55 51.1	8.1699	8.559	2.84	3.41	17 20 17.1
18.2	16 6 13.07	6 27.12	18 56 8.0	56 42.1	8.1644	8.550	2.84	3.41	18 20 13.5
19.2	16 6 33.96	6 47.82	18 56 58.6	57 32.0	8.1586	8.541	2.85	3.41	19 20 10.0
20.2	16 6 54.56	7 8.23	18 57 48.2	58 20.8	8.1524	8.532	2.85	3.42	20 20 6.4
21.2	16 7 14.87	7 28.35	18 58 36.7	59 8.6	8.1462	8.522	2.86	3.42	21 20 2.8
22.2	16 7 34.89	7 48.18	18 59 24.1	59 55.4	8.1398	8.513	2.86	3.42	22 19 59.2
23.2	16 7 54.61	8 7.71	19 0 10.5	0 41.1	8.1332	8.503	2.87	3.42	23 19 55.6
24.2	16 8 14.03	8 26.93	19 0 55.8	1 25.7	8.1264	8.492	2.87	3.42	24 19 52.0
25.2	16 8 33.14	8 45.84	19 1 40.0	2 9.2	8.1194	8.482	2.88	3.42	25 19 48.3
26.2	16 8 51.94	9 4.43	19 2 23.1	2 51.6	8.1122	8.471	2.88	3.42	26 19 44.7
27.1	16 9 10.43	9 22.71	19 3 5.2	3 32.9	8.1049	8.460	2.88	3.42	27 19 41.1
28.1	16 9 28.61	9 40.67	19 3 46.2	4 13.1	8.0973	8.449	2.89	3.42	28 19 37.4
29.1	16 9 46.46	9 58.30	19 4 26.1	4 52.3	8.0892	8.437	2.89	3.42	29 19 33.8
30.1	16 10 3.98	10 15.60	19 5 4.9	5 30.4	8.0811	8.424	2.90	3.42	30 19 30.1
31.1	16 10 21.17	10 32.57	19 5 42.6	6 7.4	8.0726	8.412	2.90	3.42	31 19 26.5
Feb. 1.1	16 10 38.02	10 49.20	19 6 19.2	6 43.3	8.0640	8.399	2.90	3.42	1 19 22.9
2.1	16 10 54.54	11 5.49	19 6 54.7	7 18.1	8.0552	8.385	2.91	3.42	2 19 19.2
3.1	16 11 10.72	11 21.44	19 7 29.1	7 51.8	8.0459	8.371	2.91	3.42	3 19 15.5
4.1	16 11 26.55	11 37.04	19 8 2.4	8 24.4	8.0363	8.357	2.92	3.42	4 19 11.9
5.1	16 11 42.03	11 52.28	19 8 34.6	8 55.8	8.0265	8.342	2.92	3.42	5 19 8.2
6.1	16 11 57.16	12 7.17	19 9 5.7	9 26.1	8.0163	8.327	2.92	3.42	6 19 4.5
7.1	16 12 11.93	12 21.71	19 9 35.7	9 55.3	8.0058	8.311	2.93	3.42	7 19 0.8
8.1	16 12 26.35	12 35.89	19 10 4.6	10 23.5	7.9951	8.295	2.93	3.42	8 18 57.1
9.1	16 12 40.41	12 49.70	19 10 32.5	10 50.6	7.9839	8.279	2.94	3.42	9 18 53.4
10.1	16 12 54.10	13 3.14	19 10 59.3	11 16.7	7.9721	8.261	2.94	3.42	10 18 49.7
11.1	16 13 7.42	13 16.22	19 11 25.0	11 41.7	7.9602	8.242	2.94	3.42	11 18 46.0
12.1	16 13 20.38	13 28.93	19 11 49.6	12 5.6	7.9480	8.223	2.95	3.42	12 18 42.3
13.1	16 13 32.97	13 41.26	19 12 13.1	12 28.4	7.9351	8.202	2.95	3.42	13 18 38.5
14.1	16 13 45.18	13 53.21	19 12 35.5	12 50.1	7.9214	8.181	2.96	3.42	14 18 34.8
15.1	16 13 57.00	14 4.77	19 12 56.8	13 10.6	7.9070	8.159	2.96	3.42	15 18 31.1
16.1	16 14 8.43	14 15.95	19 13 17.0	13 30.0	7.8924	8.135	2.96	3.42	16 18 27.3
17.1	16 14 19.48	14 26.74	19 13 36.1	13 48.3	7.8773	8.110	2.97	3.42	17 18 23.6
18.1	16 14 30.14	14 37.14	19 13 54.1	14 5.5	7.8614	8.083	2.97	3.42	18 18 19.8
19.1	16 14 40.41	14 47.14	19 14 11.0	14 21.7	7.8447	8.055	2.98	3.42	19 18 16.0
20.1	16 14 50.28	14 56.74	19 14 26.8	14 36.8	7.8271	8.025	2.98	3.42	20 18 12.3
21.1	16 14 59.75	15 5.94	19 14 41.5	14 50.9	7.8087	7.994	2.98	3.42	21 18 8.5
22.1	16 15 8.82	15 14.74	19 14 55.2	15 3.9	7.7893	7.961	2.99	3.42	22 18 4.7
23.1	16 15 17.48	15 23.13	19 15 7.8	15 15.8	7.7690	7.923	2.99	3.42	23 18 0.9
24.1	16 15 25.74	15 31.11	19 15 19.3	15 26.6	7.7477	7.881	2.99	3.42	24 17 57.1
25.1	16 15 33.59	15 38.68	19 15 29.7	15 36.3	7.7250	7.837	2.99	3.42	25 17 53.3
26.1	16 15 41.03	15 45.84	19 15 39.1	15 44.9	7.7011	7.789	3.00	3.42	26 17 49.5
27.1	16 15 48.06	15 52.59	19 15 47.4	15 52.4	7.6754	7.731	3.00	3.41	27 17 45.7
28.1	16 15 54.67	15 58.92	19 15 54.6	15 58.8	7.6482	7.664	3.00	3.41	28 17 41.9
29.1	16 16 0.87	16 4.83	19 16 0.7	16 4.1	7.6191	7.586	3.00	3.41	29 17 38.0
30.1	16 16 6.65	16 10.33	19 16 5.7	16 8.4	+7.5875	-7.490	-3.00	+3.41	30 17 34.2

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of α .		Log of δ .		Mean Solar Time of Meridian Transit.
	At Sidereal Oh.	At Transit.	At Sidereal Oh.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
Mar.	d h m s	m s	° ' "	° ' "					d h m
	1.1 16 16 6.65	16 10.33	-19 16 5.7	16 8.4	+7.5875	-7.490	-3.00	+3.41	1 17 34.2
	2.1 16 16 12.01	16 15.41	19 16 9.6	16 11.7	7.5539	7.373	3.00	3.41	2 17 30.3
	3.1 16 16 16.96	16 20.08	19 16 12.5	16 13.9	7.5179	7.213	3.01	3.40	3 17 26.5
	4.0 16 16 21.50	16 24.33	19 16 14.3	16 15.0	7.4781	6.956	3.01	3.40	4 17 22.6
	5.0 16 16 25.62	16 28.17	19 16 15.1	16 15.0	7.4338	-6.240	3.01	3.40	5 17 18.7
	6.0 16 16 29.32	16 31.59	19 16 14.8	16 14.0	7.3845	+6.745	3.01	3.40	6 17 14.9
	7.0 16 16 32.60	16 34.59	19 16 13.5	16 12.0	7.3288	7.097	3.01	3.40	7 17 11.0
	8.0 16 16 35.46	16 37.17	19 16 11.2	16 9.0	7.2649	7.289	3.01	3.39	8 17 7.1
	9.0 16 16 37.90	16 39.33	19 16 7.9	16 4.9	7.1899	7.427	3.01	3.39	9 17 3.2
	10.0 16 16 39.92	16 41.07	19 16 3.5	15 59.8	7.0993	7.536	3.01	3.39	10 16 59.3
	11.0 16 16 41.52	16 42.38	19 15 58.0	15 53.7	6.9847	7.680	3.01	3.39	11 16 55.4
	12.0 16 16 42.70	16 43.27	19 15 51.5	15 46.6	6.8281	7.684	3.01	3.39	12 16 51.5
	13.0 16 16 43.46	16 43.74	19 15 44.1	15 38.5	6.5820	7.739	3.01	3.38	13 16 47.5
	14.0 16 16 43.80	16 43.79	19 15 35.7	15 29.4	+5.9556	7.791	3.01	3.38	14 16 43.6
	15.0 16 16 43.72	16 43.42	19 15 26.3	15 19.3	-6.3115	7.837	3.01	3.38	15 16 39.7
	16.0 16 16 43.21	16 42.63	19 15 15.9	15 8.2	6.6369	7.881	3.01	3.37	16 16 35.7
	17.0 16 16 42.29	16 41.42	19 15 4.4	14 56.1	6.8047	7.921	3.01	3.37	17 16 31.8
	18.0 16 16 40.95	16 39.80	19 14 51.9	14 43.0	7.0320	7.954	3.01	3.37	18 16 27.8
	19.0 16 16 39.19	16 37.76	19 14 38.5	14 28.9	7.1350	7.985	3.01	3.36	19 16 23.9
	20.0 16 16 37.02	16 35.31	19 14 24.1	14 13.9	7.2182	8.013	3.01	3.36	20 16 19.9
	21.0 16 16 34.43	16 32.44	19 14 8.8	13 57.9	7.2880	8.040	3.01	3.36	21 16 15.9
	22.0 16 16 31.43	16 29.15	19 13 52.5	13 40.9	7.3481	8.067	3.00	3.35	22 16 11.9
	23.0 16 16 28.01	16 25.45	19 13 35.2	13 22.9	7.4010	8.092	3.00	3.35	23 16 7.9
	24.0 16 16 24.18	16 21.34	19 13 16.9	13 4.0	7.4475	8.115	3.00	3.34	24 16 3.9
	25.0 16 16 19.94	16 16.83	19 12 57.7	12 44.2	7.4896	8.135	3.00	3.34	25 16 59.9
	26.0 16 16 15.29	16 11.91	19 12 37.6	12 23.5	7.5274	8.154	2.99	3.34	26 16 55.9
	27.0 16 16 10.24	16 6.59	19 12 16.6	12 1.8	7.5618	8.174	2.99	3.33	27 16 51.9
	28.0 16 16 4.79	16 0.87	19 11 54.6	11 39.2	7.5933	8.193	2.99	3.33	28 16 47.9
	29.0 16 15 58.95	15 54.76	19 11 31.7	11 15.7	7.6227	8.210	2.98	3.32	29 16 43.8
	30.0 16 15 52.71	15 48.26	19 11 7.9	10 51.3	7.6502	8.226	2.98	3.32	30 16 39.8
Apr.	1.0 16 15 46.08	15 41.37	19 10 43.2	10 26.0	7.6754	8.241	2.97	3.31	31 16 35.7
	2.0 16 15 39.07	15 34.10	19 10 17.7	9 59.9	7.6990	8.256	2.97	3.31	1 15 31.7
	3.0 16 15 31.68	15 26.46	19 9 51.3	9 33.0	7.7210	8.270	2.96	3.30	2 15 27.6
	4.0 16 15 23.92	15 18.44	19 9 24.1	9 5.2	7.7420	8.283	2.96	3.30	3 15 23.5
	5.0 16 15 15.78	15 10.05	19 8 56.0	8 36.6	7.7620	8.296	2.95	3.29	4 15 19.5
	6.0 16 15 7.27	15 1.29	19 8 27.1	8 7.1	7.7809	8.309	2.95	3.28	5 15 15.4
	7.0 16 14 58.39	14 52.17	19 7 57.4	7 36.8	7.7988	8.321	2.94	3.27	6 15 11.3
	8.0 16 14 49.15	14 42.69	19 7 26.8	7 5.7	7.8155	8.333	2.94	3.26	7 15 7.2
	9.0 16 14 39.56	14 32.86	19 6 55.4	6 33.8	7.8313	8.343	2.93	3.25	8 15 3.1
	10.0 16 14 29.62	14 22.69	19 6 23.3	6 1.2	7.8466	8.354	2.93	3.24	9 14 59.0
	11.0 16 14 19.33	14 12.17	19 5 50.4	5 27.8	7.8614	8.363	2.92	3.23	10 14 54.9
	12.0 16 14 8.69	14 1.31	19 5 16.8	4 53.7	7.8753	8.372	2.92	3.22	11 14 50.8
	13.0 16 13 57.72	13 50.11	19 4 42.5	4 18.9	7.8885	8.381	2.91	3.21	12 14 46.7
	14.0 16 13 46.41	13 38.58	19 4 7.5	3 43.4	7.9014	8.391	2.90	3.20	13 14 42.6
	15.0 16 13 34.77	13 26.73	19 3 31.7	3 7.2	7.9135	8.400	2.89	3.19	14 14 38.4
	16.0 16 13 22.81	13 14.56	19 2 55.2	2 30.2	7.9250	8.408	2.88	3.18	15 14 34.3
	17.0 16 13 10.54	13 2.07	19 2 18.0	1 52.5	7.9361	8.416	2.87	3.17	16 14 30.2
	18.0 16 12 57.95	12 49.27	19 1 40.1	1 14.1	7.9470	8.424	2.86	3.16	17 14 26.0
	19.0 16 12 45.05	12 36.17	19 1 1.5	0 35.1	7.9571	8.432	2.85	3.15	18 14 21.9
	20.0 16 12 31.86	12 22.78	18 60 22.3	59 55.5	7.9666	8.438	2.84	3.14	19 14 17.7
	21.0 16 12 18.38	12 9.11	18 59 42.5	59 15.2	7.9758	8.445	2.83	3.12	20 14 13.6
	22.0 16 12 4.62	11 55.17	18 59 2.0	58 34.3	7.9847	8.452	2.82	3.10	21 14 9.4
	23.0 16 11 50.58	11 40.95	18 58 20.9	57 52.9	7.9932	8.458	2.81	3.08	22 14 5.2
	24.0 16 11 36.27	11 26.46	18 57 39.3	57 10.9	8.0012	8.463	2.80	3.07	23 14 1.1
	25.0 16 11 21.70	11 11.72	18 56 57.2	56 28.4	8.0090	8.469	2.79	3.05	24 13 56.9
	26.0 16 11 6.87	10 56.73	18 56 14.5	55 45.4	8.0163	8.475	2.77	3.03	25 13 52.7
	27.0 16 10 51.80	10 41.50	18 55 31.3	55 1.9	8.0232	8.480	2.76	3.01	26 13 48.5
	28.0 16 10 36.49	10 26.04	18 54 47.6	54 17.9	8.0299	8.485	2.74	3.00	27 13 44.3
	29.0 16 10 20.95	10 10.35	18 54 3.4	53 33.5	8.0362	8.489	2.73	2.98	28 13 40.1
	30.0 16 10 5.19	9 54.44	18 53 18.8	52 48.6	8.0422	8.493	2.71	2.96	29 13 35.9
	31.0 16 9 49.21	9 38.33	18 52 33.7	52 3.2	8.0479	8.498	2.70	2.94	30 13 31.7
	32.0 16 9 33.03	9 22.03	-18 51 48.2	51 17.4	-8.0532	+8.502	-2.68	+2.91	31 13 27.5

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of a.		Log of b.		Mean Solar Time of Meridian Transit.	
	At Sidereal Oh.	At Transit.	At Sidereal Oh.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.		
May	d	h m s	m s	° ' "					d h m	
	1.9	16 9 16.66	9 5.54	-18 51 23	50 31.2	-8.0582	+8.505	-2.66	+2.89	2 13 23.3
	2.9	16 9 0.10	8 48.86	18 50 16.0	49 44.7	8.0631	8.509	2.64	2.86	3 13 19.1
	3.9	16 8 43.36	8 32.00	18 49 29.4	48 57.9	8.0677	8.511	2.62	2.84	4 13 14.9
	4.9	16 8 26.44	8 14.97	18 48 42.5	48 10.8	8.0721	8.514	2.60	2.82	5 13 10.7
	5.9	16 8 9.36	7 57.78	18 47 55.3	47 23.4	8.0762	8.517	2.57	2.79	6 13 6.5
	6.9	16 7 52.12	7 40.44	18 47 7.8	46 35.8	8.0801	8.519	2.54	2.77	7 13 2.3
	7.9	16 7 34.73	7 22.97	18 46 20.1	45 47.9	8.0836	8.521	2.51	2.75	8 12 58.1
	8.9	16 7 17.21	7 5.37	18 45 32.2	44 59.8	8.0868	8.523	2.48	2.73	9 12 53.8
	9.9	16 6 59.56	6 47.64	18 44 44.0	44 11.4	8.0899	8.526	2.45	2.71	10 12 49.6
	10.9	16 6 41.79	6 29.80	18 43 55.5	43 22.8	8.0927	8.528	2.42	+2.68	11 12 45.4
	11.9	16 6 23.91	6 11.86	18 43 6.8	42 34.1	8.0952	8.530	2.38		12 12 41.1
	12.9	16 6 5.93	5 53.82	18 42 18.0	41 45.3	8.0976	8.531	2.34		13 12 36.9
	13.9	16 5 47.85	5 35.68	18 41 29.1	40 56.3	8.0999	8.531	2.30		14 12 32.7
	14.9	16 5 29.68	5 17.47	18 40 40.1	40 7.2	8.1018	8.532	2.26		15 12 28.4
	15.8	16 5 11.44	4 59.19	18 39 51.0	39 18.1	8.1034	8.533	2.21		16 12 24.2
	16.8	16 4 53.14	4 40.85	18 39 1.9	38 28.9	8.1048	8.533	2.16		17 12 20.0
	17.8	16 4 34.78	4 22.46	18 38 12.7	37 39.7	8.1061	8.534	2.08		18 12 15.7
	18.8	16 4 16.37	4 4.03	18 37 23.5	36 50.6	8.1072	8.533	1.98		19 12 11.5
	19.8	16 3 57.92	3 45.56	18 36 34.4	36 1.6	8.1080	8.532	1.86		20 12 7.3
	20.8	16 3 39.44	3 27.06	18 35 45.4	35 12.6	8.1087	8.532	-1.68		21 12 3.0
	21.8	16 3 20.93	3 8.55	18 34 56.4	34 23.7	8.1092	8.531			22 11 58.8
	22.8	16 3 2.41	2 50.04	18 34 7.5	33 34.9	8.1092	8.530			23 11 54.5
	23.8	16 2 43.90	2 31.54	18 33 18.8	32 46.2	8.1088	8.529	+1.68		24 11 50.3
	24.8	16 2 25.41	2 13.07	18 32 30.2	31 57.7	8.1083	8.528	1.86	-2.68	25 11 46.1
	25.8	16 2 6.94	1 54.63	18 31 41.7	31 9.4	8.1076	8.526	1.98	2.78	26 11 41.8
	26.8	16 1 48.51	1 36.22	18 30 53.4	30 21.3	8.1067	8.524	2.07	2.83	27 11 37.6
	27.8	16 1 30.12	1 17.86	18 30 5.4	29 33.5	8.1057	8.522	2.13	2.86	28 11 33.4
	28.8	16 1 11.77	0 59.55	18 29 17.7	28 46.0	8.1046	8.519	2.19	2.89	29 11 29.1
	29.8	16 0 53.48	0 41.31	18 28 30.3	27 58.9	8.1030	8.516	2.24	2.92	30 11 24.9
	30.8	16 0 35.26	0 23.15	18 27 43.3	27 12.1	8.1012	8.512	2.29	2.95	31 11 20.6
June	31.8	16 0 17.12	0 5.07	18 26 56.6	26 25.7	8.0993	8.509	2.33	2.98	32 11 16.4
	1.8	15 59 59.06	59 47.08	18 26 10.3	25 39.7	8.0972	8.505	2.37	3.01	2 11 12.2
	2.8	15 59 41.10	59 29.19	18 25 24.4	24 54.1	8.0947	8.502	2.41	3.04	3 11 7.9
	3.8	15 59 23.24	59 11.41	18 24 38.9	24 8.9	8.0922	8.498	2.44	3.06	4 11 3.7
	4.8	15 59 5.49	58 53.75	18 23 53.8	23 24.1	8.0892	8.494	2.47	3.08	5 10 59.5
	5.8	15 58 47.87	58 36.22	18 23 9.2	22 39.8	8.0860	8.489	2.50	3.10	6 10 55.3
	6.8	15 58 30.38	58 18.82	18 22 25.1	21 56.1	8.0828	8.483	2.53	3.12	7 10 51.0
	7.8	15 58 13.02	58 1.55	18 21 41.6	21 12.9	8.0794	8.478	2.55	3.14	8 10 46.8
	8.8	15 57 55.80	57 44.42	18 20 58.6	20 30.3	8.0759	8.473	2.57	3.15	9 10 42.6
	9.8	15 57 38.72	57 27.45	18 20 16.1	19 48.2	8.0721	8.467	2.59	3.17	10 10 38.4
	10.8	15 57 21.80	57 10.65	18 19 34.2	19 6.7	8.0677	8.461	2.61	3.19	11 10 34.2
	11.8	15 57 5.06	56 54.03	18 18 52.9	18 25.8	8.0631	8.454	2.63	3.21	12 10 30.0
	12.8	15 56 48.50	56 37.59	18 18 12.2	17 45.6	8.0583	8.447	2.65	3.23	13 10 25.8
	13.8	15 56 32.12	56 21.35	18 17 32.2	17 6.1	8.0533	8.440	2.67	3.25	14 10 21.6
	14.8	15 56 15.94	56 5.31	18 16 52.9	16 27.3	8.0479	8.432	2.69	3.27	15 10 17.4
	15.8	15 55 59.96	55 49.47	18 16 14.4	15 49.3	8.0424	8.423	2.70	3.28	16 10 13.2
	16.8	15 55 44.19	55 33.84	18 15 36.6	15 12.1	8.0366	8.415	2.72	3.29	17 10 9.0
	17.8	15 55 28.63	55 18.43	18 14 59.6	14 35.6	8.0304	8.405	2.74	3.30	18 10 4.8
	18.8	15 55 13.30	55 3.26	18 14 23.4	13 59.9	8.0239	8.396	2.76	3.31	19 10 0.6
	19.8	15 54 58.20	54 48.32	18 13 48.0	13 25.0	8.0171	8.386	2.77	3.32	20 9 56.4
	20.8	15 54 43.34	54 33.63	18 13 13.4	12 51.0	8.0100	8.375	2.78	3.33	21 9 52.3
	21.7	15 54 28.73	54 19.19	18 12 39.7	12 17.8	8.0026	8.364	2.80	3.34	22 9 48.1
	22.7	15 54 14.37	54 5.00	18 12 6.8	11 45.5	7.9948	8.353	2.81	3.35	23 9 43.9
	23.7	15 54 0.27	53 51.08	18 11 34.8	11 14.2	7.9867	8.340	2.82	3.36	24 9 39.8
	24.7	15 53 46.44	53 37.43	18 11 3.8	10 43.8	7.9782	8.326	2.83	3.37	25 9 35.6
	25.7	15 53 32.88	53 24.05	18 10 33.8	10 14.4	7.9694	8.312	2.84	3.37	26 9 31.4
	26.7	15 53 19.60	53 10.96	18 10 4.7	9 45.9	7.9601	8.299	2.85	3.38	27 9 27.3
	27.7	15 53 6.61	52 58.17	18 9 36.5	9 18.4	7.9502	8.284	2.85	3.39	28 9 23.1
	28.7	15 52 53.92	52 45.68	18 9 9.3	8 51.9	7.9399	8.267	2.86	3.40	29 9 19.0
	29.7	15 52 41.53	52 33.49	18 8 43.2	8 26.5	7.9296	8.250	2.87	3.40	30 9 14.9
	30.7	15 52 29.43	52 21.60	18 8 18.1	8 2.1	7.9188	8.233	2.87	3.41	31 9 10.7
31.7	15 52 17.64	52 10.02	-18 7 54.0	7 38.7	-7.9074	+8.214	+2.88	-3.42	32 9 6.6	

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of α .		Log of δ .		Mean Solar Time of Meridian Transit.
	At Sidereal Oh.	At Transit.	At Sidereal Oh.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
July 1.7	15 52 17.64	52 10.02	-18 7 54.0	7 38.7	-7.9074	+8.214	+2.88	-3.42	d h m 2 9 6.6
2.7	15 52 6.16	51 58.75	18 7 31.0	7 16.4	7.8955	8.193	2.89	3.42	3 9 2.5
3.7	15 51 55.00	51 47.80	18 7 9.1	6 55.2	7.8830	8.171	2.89	3.43	4 8 58.4
4.7	15 51 44.16	51 37.17	18 6 48.3	6 35.1	7.8702	8.149	2.90	3.44	5 8 54.3
5.7	15 51 33.64	51 26.87	18 6 28.5	6 16.0	7.8568	8.126	2.90	3.44	6 8 50.2
6.7	15 51 23.45	51 16.90	18 6 9.8	5 58.0	7.8427	8.101	2.90	3.45	7 8 46.1
7.7	15 51 13.59	51 7.27	18 5 52.2	5 41.2	7.8280	8.072	2.91	3.46	8 8 42.0
8.7	15 51 4.07	50 57.97	18 5 35.8	5 25.6	7.8124	8.040	2.91	3.46	9 8 37.9
9.7	15 50 54.89	50 49.01	18 5 20.6	5 11.2	7.7964	8.006	2.92	3.47	10 8 33.8
10.7	15 50 46.05	50 40.40	18 5 6.6	4 58.0	7.7794	7.969	2.93	3.47	11 8 29.7
11.7	15 50 37.56	50 32.15	18 4 53.8	4 45.9	7.7612	7.930	2.93	3.47	12 8 25.7
12.7	15 50 29.43	50 24.27	18 4 42.1	4 35.0	7.7417	7.887	2.94	3.48	13 8 21.6
13.7	15 50 21.67	50 16.75	18 4 31.6	4 25.3	7.7213	7.837	2.94	3.48	14 8 17.5
14.7	15 50 14.27	50 9.59	18 4 22.3	4 16.8	7.6999	7.781	2.95	3.48	15 8 13.5
15.7	15 50 7.24	50 2.80	18 4 14.2	4 9.5	7.6773	7.717	2.95	3.49	16 8 9.4
16.7	15 50 0.57	49 56.37	18 4 7.3	4 3.4	7.6535	7.641	2.96	3.49	17 8 5.4
17.7	15 49 54.27	49 50.31	18 4 1.6	3 58.5	7.6280	7.545	2.96	3.49	18 8 1.4
18.7	15 49 48.34	49 44.63	18 3 57.2	3 54.9	7.6005	7.421	2.96	3.50	19 7 57.3
19.7	15 49 42.79	49 39.34	18 3 54.0	3 52.6	7.5704	7.248	2.97	3.50	20 7 53.3
20.7	15 49 37.63	49 34.44	18 3 52.1	3 51.6	7.5376	+6.939	2.97	3.50	21 7 49.3
21.7	15 49 32.86	49 29.92	18 3 51.5	3 51.8	7.5025	-5.541	2.97	3.50	22 7 45.3
22.7	15 49 28.47	49 25.78	18 3 52.2	3 53.3	7.4649	6.966	2.97	3.50	23 7 41.3
23.7	15 49 24.46	49 22.03	18 3 54.1	3 56.0	7.4231	7.240	2.97	3.50	24 7 37.3
24.7	15 49 20.84	49 18.67	18 3 57.2	4 0.0	7.3763	7.416	2.97	3.50	25 7 33.3
25.7	15 49 17.61	49 15.70	18 4 1.6	4 5.3	7.3238	7.545	2.98	3.50	26 7 29.3
26.7	15 49 14.77	49 13.12	18 4 7.3	4 11.8	7.2641	7.644	2.98	3.50	27 7 25.4
27.6	15 49 12.32	49 10.93	18 4 14.3	4 19.6	7.1938	7.725	2.98	3.50	28 7 21.4
28.6	15 49 10.27	49 9.13	18 4 22.6	4 28.7	7.1100	7.791	2.98	3.49	29 7 17.4
29.6	15 49 8.61	49 7.73	18 4 32.1	4 39.1	7.0075	7.848	2.98	3.49	30 7 13.5
30.6	15 49 7.34	49 6.72	18 4 42.9	4 50.8	6.8730	7.900	2.98	3.49	31 7 9.5
Aug. 1.6	15 49 6.46	49 6.11	18 4 55.0	5 3.7	6.6741	7.947	2.99	3.49	32 7 5.6
2.6	15 49 5.98	49 5.89	18 5 8.4	5 17.8	-6.8888	7.988	2.99	3.48	2 7 1.6
3.6	15 49 5.90	49 6.07	18 5 23.0	5 33.2	+5.9208	8.023	2.99	3.48	3 6 57.7
4.6	15 49 6.22	49 6.65	18 5 38.8	5 49.9	6.5576	8.058	2.99	3.48	4 6 53.8
5.6	15 49 6.94	49 7.62	18 5 55.9	6 7.8	6.8031	8.091	2.99	3.48	5 6 49.9
6.6	15 49 8.05	49 8.99	18 6 14.3	6 27.0	6.9572	8.120	2.99	3.47	6 6 46.0
7.6	15 49 9.55	49 10.75	18 6 33.9	6 47.4	7.0721	8.147	2.99	3.47	7 6 42.1
8.6	15 49 11.45	49 12.91	18 6 54.7	7 9.0	7.1628	8.172	2.99	3.47	8 6 38.2
9.6	15 49 13.74	49 15.47	18 7 16.7	7 31.9	7.2378	8.197	2.99	3.47	9 6 34.3
10.6	15 49 16.43	49 18.43	18 7 40.0	7 56.0	7.3025	8.221	2.99	3.46	10 6 30.4
11.6	15 49 19.52	49 21.78	18 8 4.6	8 21.4	7.3582	8.243	2.99	3.46	11 6 26.5
12.6	15 49 23.00	49 25.53	18 8 30.4	8 48.0	7.4075	8.263	2.99	3.46	12 6 22.7
13.6	15 49 26.88	49 29.67	18 8 57.4	9 15.8	7.4523	8.283	2.98	3.45	13 6 18.8
14.6	15 49 31.16	49 34.20	18 9 25.6	9 44.8	7.4924	8.301	2.98	3.45	14 6 15.0
15.6	15 49 35.83	49 39.12	18 9 55.0	10 15.0	7.5287	8.319	2.98	3.45	15 6 11.1
16.6	15 49 40.89	49 44.44	18 10 25.6	10 46.4	7.5626	8.336	2.98	3.44	16 6 7.3
17.6	15 49 46.35	49 50.16	18 10 57.4	11 19.0	7.5941	8.352	2.98	3.44	17 6 3.4
18.6	15 49 52.20	49 56.28	18 11 30.4	11 52.8	7.6234	8.368	2.98	3.44	18 5 59.6
19.6	15 49 58.45	50 2.79	18 12 4.6	12 27.8	7.6509	8.383	2.97	3.43	19 5 55.8
20.6	15 50 5.09	50 9.69	18 12 40.0	13 4.0	7.6764	8.398	2.97	3.43	20 5 52.0
21.6	15 50 12.12	50 16.98	18 13 16.6	13 41.3	7.7005	8.412	2.97	3.42	21 5 48.1
22.6	15 50 19.54	50 24.66	18 13 54.3	14 19.7	7.7233	8.424	2.97	3.42	22 5 44.3
23.6	15 50 27.35	50 32.72	18 14 33.1	14 59.2	7.7447	8.436	2.97	3.41	23 5 40.5
24.6	15 50 35.54	50 41.16	18 15 12.9	15 39.8	7.7649	8.447	2.97	3.41	24 5 36.7
25.6	15 50 44.11	50 49.98	18 15 53.8	16 21.5	7.7839	8.459	2.96	3.40	25 5 33.0
26.6	15 50 53.05	50 59.18	18 16 35.8	17 4.2	7.8021	8.471	2.96	3.40	26 5 29.2
27.6	15 51 2.37	51 8.75	18 17 18.9	17 48.0	7.8198	8.482	2.96	3.39	27 5 25.4
28.6	15 51 12.07	51 18.70	18 18 3.1	18 33.0	7.8368	8.493	2.96	3.39	28 5 21.7
29.6	15 51 22.15	51 29.02	18 18 48.5	19 19.0	7.8530	8.503	2.95	3.38	29 5 17.9
30.6	15 51 32.60	51 39.70	18 19 34.9	20 6.1	7.8682	8.513	2.95	3.38	30 5 14.1
31.6	15 51 43.41	51 50.75	18 20 22.3	20 54.2	7.8826	8.522	2.95	3.37	31 5 10.4
32.6	15 51 54.58	52 2.17	-18 21 10.6	21 43.2	+7.8968	-8.530	+2.94	-3.37	32 5 6.6

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of α .		Log of δ .		Mean Solar Time of Meridian Transit.
	At Sidereal Oh.	At Transit.	At Sidereal Oh.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
Sept. 1.6	15 52 6.12	52 13.95	-18 21 59.9	22 33.1	+7.9106	-8.539	+2.94	-3.36	d h m 2.9
2.5	15 52 18.02	52 26.09	18 22 50.2	23 24.0	7.9237	8.548	2.94	3.35	3 4 59.2
3.5	15 52 30.28	52 38.59	18 23 41.5	24 15.9	7.9365	8.556	2.94	3.34	4 4 55.4
4.5	15 52 42.90	52 51.44	18 24 33.8	25 8.8	7.9487	8.564	2.93	3.34	5 4 51.7
5.5	15 52 55.87	53 4.64	18 25 27.0	26 2.7	7.9604	8.571	2.93	3.33	6 4 48.0
6.5	15 53 9.19	53 18.20	18 26 21.1	26 57.5	7.9718	8.579	2.93	3.32	7 4 44.3
7.5	15 53 22.86	53 32.11	18 27 16.2	27 53.2	7.9829	8.586	2.92	3.31	8 4 40.6
8.5	15 53 36.88	53 46.36	18 28 12.2	28 49.7	7.9936	8.593	2.92	3.30	9 4 36.9
9.5	15 53 51.24	54 0.95	18 29 9.0	29 47.1	8.0039	8.599	2.92	3.29	10 4 33.2
10.5	15 54 5.94	54 15.88	18 30 6.7	30 45.3	8.0139	8.606	2.91	3.29	11 4 29.6
11.5	15 54 20.98	54 31.15	18 31 5.2	31 44.4	8.0238	8.612	2.91	3.28	12 4 25.9
12.5	15 54 36.36	54 46.75	18 32 4.5	32 44.3	8.0334	8.618	2.91	3.27	13 4 22.2
13.5	15 54 52.08	55 2.69	18 33 4.6	33 45.0	8.0426	8.623	2.90	3.26	14 4 18.5
14.5	15 55 8.13	55 18.96	18 34 5.5	34 46.5	8.0516	8.629	2.90	3.25	15 4 14.9
15.5	15 55 24.51	55 35.56	18 35 7.2	35 48.7	8.0603	8.635	2.90	3.24	16 4 11.2
16.5	15 55 41.22	55 52.49	18 36 9.7	36 51.6	8.0688	8.640	2.89	3.23	17 4 7.6
17.5	15 55 58.25	56 9.74	18 37 12.9	37 55.3	8.0769	8.645	2.89	3.22	18 4 3.9
18.5	15 56 15.60	56 27.31	18 38 16.9	38 59.8	8.0849	8.650	2.88	3.21	19 4 0.3
19.5	15 56 33.27	56 45.18	18 39 21.6	40 5.0	8.0925	8.655	2.88	3.20	20 3 56.6
20.5	15 56 51.24	57 3.36	18 40 27.0	41 10.9	8.0999	8.660	2.87	3.19	21 3 53.0
21.5	15 57 9.52	57 21.85	18 41 33.1	42 17.4	8.1073	8.664	2.87	3.18	22 3 49.4
22.5	15 57 28.11	57 40.64	18 42 39.8	43 24.6	8.1144	8.668	2.86	3.17	23 3 45.8
23.5	15 57 47.00	57 59.73	18 43 47.2	44 32.4	8.1212	8.672	2.85	3.16	24 3 42.2
24.5	15 58 6.18	58 19.11	18 44 55.2	45 40.8	8.1278	8.676	2.85	3.15	25 3 38.5
25.5	15 58 25.65	58 38.78	18 46 3.7	46 49.7	8.1342	8.679	2.84	3.14	26 3 34.9
26.5	15 58 45.41	58 58.73	18 47 12.8	47 59.2	8.1406	8.683	2.83	3.12	27 3 31.3
27.5	15 59 5.45	59 18.96	18 48 22.5	49 9.3	8.1466	8.687	2.82	3.10	28 3 27.7
28.5	15 59 25.77	59 39.47	18 49 32.8	50 19.9	8.1525	8.690	2.82	3.08	29 3 24.2
29.5	15 59 46.37	60 0.26	18 50 43.6	51 31.0	8.1584	8.693	2.81	3.06	30 3 20.6
30.5	16 0 7.25	0 21.32	18 51 54.9	52 42.6	8.1642	8.696	2.81	3.04	31 3 17.0
Oct. 1.5	16 0 28.40	0 42.65	18 53 6.6	53 54.6	8.1696	8.698	2.80	3.02	2 3 13.4
2.5	16 0 49.81	1 4.25	18 54 18.7	55 7.1	8.1750	8.701	2.79	3.00	3 3 9.8
3.5	16 1 11.49	1 26.11	18 55 31.3	56 20.1	8.1803	8.704	2.79	2.98	4 3 6.3
4.5	16 1 33.43	1 48.22	18 56 44.4	57 33.6	8.1853	8.707	2.78	2.95	5 3 2.7
5.5	16 1 55.62	2 10.59	18 57 58.0	58 47.5	8.1903	8.710	2.78	2.92	6 2 59.1
6.5	16 2 18.07	2 33.22	18 59 12.0	60 1.7	8.1954	8.712	2.77	2.89	7 2 55.6
7.5	16 2 40.78	2 56.11	19 0 26.3	1 16.2	8.2002	8.714	2.77	2.86	8 2 52.0
8.4	16 3 3.74	3 19.24	19 1 40.9	2 31.0	8.2049	8.715	2.76	2.83	9 2 48.5
9.4	16 3 26.94	3 42.61	19 2 55.8	3 46.2	8.2094	8.717	2.76	2.80	10 2 44.9
10.4	16 3 50.38	4 6.21	19 4 11.1	5 1.8	8.2137	8.720	2.75	2.76	11 2 41.4
11.4	16 4 14.05	4 30.03	19 5 26.8	6 17.7	8.2178	8.722	2.74	2.72	12 2 37.9
12.4	16 4 37.94	4 54.07	19 6 42.8	7 33.8	8.2218	8.723	2.74	-2.68	13 2 34.3
13.4	16 5 2.05	5 18.34	19 7 59.0	8 50.2	8.2259	8.724	2.73		14 2 30.8
14.4	16 5 26.39	5 42.84	19 9 15.5	10 6.8	8.2300	8.726	2.72		15 2 27.3
15.4	16 5 50.96	6 7.57	19 10 32.2	11 23.6	8.2340	8.727	2.71		16 2 23.8
16.4	16 6 15.75	6 32.51	19 11 49.1	12 40.7	8.2377	8.728	2.70		17 2 20.2
17.4	16 6 40.75	6 57.65	19 13 6.2	13 58.1	8.2413	8.730	2.69		18 2 16.7
18.4	16 7 5.95	7 22.99	19 14 23.6	15 15.7	8.2448	8.731	2.68		19 2 13.2
19.4	16 7 31.35	7 48.53	19 15 41.2	16 33.4	8.2482	8.732	2.68		20 2 9.7
20.4	16 7 56.95	8 14.27	19 16 58.9	17 51.1	8.2515	8.732	2.67		21 2 6.2
21.4	16 8 22.74	8 40.20	19 18 16.6	19 8.9	8.2546	8.732	2.66		22 2 2.7
22.4	16 8 48.71	9 6.31	19 19 34.4	20 26.8	8.2577	8.733	2.65		23 1 59.2
23.4	16 9 14.87	9 32.59	19 20 52.3	21 44.8	8.2608	8.733	2.64		24 1 55.7
24.4	16 9 41.21	9 59.05	19 22 10.3	23 2.9	8.2637	8.734	2.63		25 1 52.2
25.4	16 10 7.72	10 25.68	19 23 28.4	24 21.0	8.2664	8.734	2.62		26 1 48.7
26.4	16 10 34.40	10 52.48	19 24 46.5	25 39.1	8.2691	8.734	2.61		27 1 45.3
27.4	16 11 1.24	11 19.44	19 26 4.6	26 57.3	8.2717	8.734	2.60		28 1 41.8
28.4	16 11 28.24	11 46.56	19 27 22.7	28 15.5	8.2743	8.734	2.58		29 1 38.3
29.4	16 11 55.40	12 13.83	19 28 40.8	29 33.6	8.2768	8.734	2.57		30 1 34.8
30.4	16 12 22.71	12 41.25	19 29 58.9	30 51.7	8.2792	8.734	2.56		31 1 31.3
31.4	16 12 50.17	13 8.82	19 31 16.9	32 9.7	8.2815	8.734	2.55		32 1 27.9
32.4	16 13 17.78	13 36.53	-19 32 34.9	33 27.6	+8.2838	-8.733	+2.53		33 1 24.4

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of α .		Log of δ .		Mean Solar Time of Meridian Transit.
	At Sidereal Oh.	At Translt.	At Sidereal Oh.	At Translt.	In R.A.	In Dec.	In R.A.	In Dec.	
Nov. ^d	^h ^m ^s	^m ^s	[°] ['] ["]	['] ["]					^d ^h ^m
	16 13 17.78	13 36.53	-19 32 34.9	33 27.6	+8.2838	-8.733	+2.53		2 1 24.4
	2.4 16 13 45.53	14 4.38	19 33 52.8	34 45.4	8.2859	8.733	2.51		3 1 20.9
	3.4 16 14 13.41	14 32.36	19 35 10.6	36 3.1	8.2880	8.732	2.50		4 1 17.5
	4.4 16 14 41.43	15 0.48	19 36 28.3	37 20.7	8.2901	8.731	2.48		5 1 14.0
	5.4 16 15 9.58	15 28.72	19 37 45.8	38 38.2	8.2920	8.731	2.46		6 1 10.5
	6.4 16 15 37.85	15 57.08	19 39 3.2	39 55.6	8.2939	8.730	2.45		7 1 7.1
	7.4 16 16 6.24	16 25.56	19 40 20.5	41 12.8	8.2957	8.729	2.43		8 1 3.6
	8.4 16 16 34.75	16 54.16	19 41 37.6	42 29.8	8.2975	8.728	2.41		9 1 0.1
	9.4 16 17 3.38	17 22.87	19 42 54.5	43 46.6	8.2992	8.727	2.40		10 0 56.7
	10.4 16 17 32.11	17 51.67	19 44 11.2	45 3.2	8.3007	8.726	2.38		11 0 53.2
	11.4 16 18 0.93	18 20.57	19 45 27.7	46 19.6	8.3021	8.725	2.36		12 0 49.8
	12.4 16 18 29.85	18 49.56	19 46 44.0	47 35.8	8.3035	8.724	2.34		13 0 46.3
	13.4 16 18 58.86	19 18.64	19 48 0.1	48 51.7	8.3049	8.722	2.32	+2.68	14 0 42.9
	14.3 16 19 27.96	19 47.81	19 49 15.9	50 7.3	8.3062	8.720	2.30	2.70	15 0 39.4
	15.3 16 19 57.15	20 17.06	19 50 31.4	51 22.6	8.3074	8.719	2.28	2.72	16 0 36.0
	16.3 16 20 26.41	20 46.38	19 51 46.6	52 37.7	8.3084	8.717	2.26	2.74	17 0 32.6
	17.3 16 20 55.74	21 15.77	19 53 1.5	53 52.4	8.3095	8.715	2.23	2.76	18 0 29.1
	18.3 16 21 25.14	21 45.22	19 54 16.1	55 6.7	8.3104	8.713	2.20	2.78	19 0 25.7
	19.3 16 21 54.60	22 14.73	19 55 30.3	56 20.7	8.3112	8.711	2.16	2.80	20 0 22.2
	20.3 16 22 24.11	22 44.29	19 56 44.2	57 34.4	8.3121	8.709	2.12	2.82	21 0 18.8
	21.3 16 22 53.68	23 13.90	19 57 57.8	58 47.8	8.3129	8.707	2.08	2.83	22 0 15.3
	22.3 16 23 23.30	23 43.56	19 59 11.0	60 0.8	8.3135	8.705	2.03	2.84	23 0 11.9
	23.3 16 23 52.96	24 13.26	20 0 23.8	1 13.4	8.3140	8.703	1.98	2.85	24 0 8.5
	24.3 16 24 22.65	24 42.99	20 1 36.2	2 25.5	8.3145	8.700	1.92	2.86	25 0 5.0
	25.3 16 24 52.38	25 12.74	20 2 48.2	3 37.2	8.3150	8.697	1.86	2.87	26 0 1.6
	26.3 16 25 22.13	25 42.51	20 3 59.7	4 48.4	8.3153	8.695	1.80	2.88	26 23 58.2
	27.3 16 25 51.90	26 12.30	20 5 10.8	5 59.2	8.3156	8.692	1.74	2.89	27 23 54.7
	28.3 16 26 21.69	26 42.11	20 6 21.5	7 9.6	8.3159	8.689	+1.68	2.90	28 23 51.3
	29.3 16 26 51.50	27 11.94	20 7 31.7	8 19.5	8.3161	8.686		2.91	29 23 47.9
	30.3 16 27 21.33	27 41.78	20 8 41.4	9 28.9	8.3163	8.683		2.92	30 23 44.4
Dec. ^d	^h ^m ^s	^m ^s	[°] ['] ["]	['] ["]					^d ^h ^m
	1.3 16 27 51.16	28 11.62	20 9 50.6	10 37.9	8.3163	8.680		2.93	1 23 41.0
	2.3 16 28 20.99	28 41.46	20 10 59.4	11 46.4	8.3163	8.678		2.94	2 23 37.5
	3.3 16 28 50.82	29 11.30	20 12 7.7	12 54.4	8.3162	8.674		2.95	3 23 34.1
	4.3 16 29 20.64	29 41.13	20 13 15.5	14 1.8	8.3161	8.671	-1.68	2.96	4 23 30.7
	5.3 16 29 50.45	30 10.94	20 14 22.8	15 8.7	8.3159	8.668	1.83	2.97	5 23 27.2
	6.3 16 30 20.24	30 40.72	20 15 29.5	16 15.1	8.3155	8.664	1.93	2.98	6 23 23.8
	7.3 16 30 50.00	31 10.48	20 16 35.7	17 20.9	8.3151	8.661	1.98	2.99	7 23 20.4
	8.3 16 31 19.74	31 40.21	20 17 41.3	18 26.2	8.3147	8.657	2.03	3.00	8 23 16.9
	9.3 16 31 49.44	32 9.90	20 18 46.4	19 31.0	8.3142	8.654	2.08	3.01	9 23 13.5
	10.3 16 32 19.11	32 39.55	20 19 51.0	20 35.2	8.3137	8.650	2.13	3.02	10 23 10.0
	11.3 16 32 48.74	33 9.15	20 20 55.0	21 38.8	8.3130	8.646	2.18	3.03	11 23 6.6
	12.3 16 33 18.32	33 38.70	20 21 58.4	22 41.8	8.3123	8.642	2.23	3.04	12 23 3.2
	13.3 16 33 47.85	34 8.20	20 23 1.2	23 44.2	8.3115	8.638	2.27	3.05	13 22 59.7
	14.3 16 34 17.32	34 37.64	20 24 3.4	24 46.1	8.3105	8.634	2.31	3.06	14 22 56.3
	15.3 16 34 46.72	35 7.01	20 25 5.1	25 47.4	8.3095	8.630	2.35	3.07	15 22 52.8
	16.3 16 35 16.06	35 36.30	20 26 6.2	26 48.0	8.3085	8.625	2.39	3.08	16 22 49.4
	17.3 16 35 45.32	36 5.52	20 27 6.6	27 47.9	8.3074	8.620	2.42	3.09	17 22 45.9
	18.3 16 36 14.51	36 34.66	20 28 6.3	28 47.2	8.3062	8.615	2.45	3.10	18 22 42.5
	19.3 16 36 43.61	37 3.70	20 29 5.4	29 45.9	8.3048	8.611	2.48	3.11	19 22 39.1
	20.3 16 37 12.61	37 32.64	20 30 3.8	30 43.9	8.3033	8.606	2.51	3.12	20 22 35.6
	21.2 16 37 41.51	38 1.48	20 31 1.6	31 41.2	8.3018	8.601	2.54	3.13	21 22 32.2
	22.2 16 38 10.31	38 30.22	20 31 58.7	32 37.9	8.3003	8.596	2.56	3.14	22 22 28.7
	23.2 16 38 39.01	38 58.86	20 32 55.2	33 33.9	8.2988	8.591	2.58	3.15	23 22 25.2
	24.2 16 39 7.61	39 27.39	20 33 51.0	34 29.2	8.2971	8.585	2.60	3.16	24 22 21.8
	25.2 16 39 36.09	39 55.80	20 34 46.1	35 23.9	8.2952	8.580	2.62	3.17	25 22 18.3
	26.2 16 40 4.44	40 24.08	20 35 40.5	36 17.9	8.2933	8.574	2.64	3.18	26 22 14.8
	27.2 16 40 32.67	40 52.23	20 36 34.2	37 11.1	8.2914	8.569	2.66	3.19	27 22 11.4
	28.2 16 41 0.78	41 20.25	20 37 27.2	38 3.6	8.2894	8.563	2.68	3.20	28 22 7.9
	29.2 16 41 28.75	41 48.13	20 38 19.5	38 55.5	8.2872	8.558	2.69	3.20	29 22 4.4
	30.2 16 41 56.58	42 15.87	20 39 11.2	39 46.8	8.2851	8.552	2.70	3.21	30 22 1.0
	31.2 16 42 24.27	42 43.47	20 40 2.2	40 37.4	8.2829	8.547	2.71	3.22	31 21 57.5
	32.2 16 42 51.82	43 10.93	-20 40 52.6	41 27.3	+8.2807	-8.541	-2.72	+3.22	32 21 54.0

URANUS, 1868.

377

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.				Apparent Declination.				Log of α .		Log of δ .		Mean Solar Time of Meridian Transit.
	At Sidereal Oh.		At Transit.		At Sidereal Oh.		At Transit.		In R.A.	In Dec.	In R.A.	In Dec.	
Jan. 0.2	d	h	m	s	m	s	o	i	7.8928	+7.964			d h m
1.2	6 47 28.55	47 25.34	+23 23 7.9	23 11.7	-7.8928	+7.964							0 12 6.8
2.2	6 47 17.30	47 14.09	23 23 21.1	23 24.9	7.8925	7.960							1 12 2.7
3.2	6 47 6.05	47 2.85	23 23 34.3	23 38.0	7.8923	7.958							2 11 58.5
4.2	6 46 54.80	46 51.61	23 23 47.4	23 51.1	7.8921	7.956							3 11 54.3
5.2	6 46 43.56	46 40.38	23 24 0.4	24 4.1	7.8918	7.954							4 11 50.2
6.2	6 46 32.34	46 29.17	23 24 13.4	24 17.0	7.8913	7.951							5 11 46.1
7.2	6 46 21.14	46 17.98	23 24 26.2	24 29.8	7.8905	7.949							6 11 42.0
8.2	6 46 9.96	46 6.81	23 24 39.0	24 42.5	7.8895	7.946							7 11 37.9
9.2	6 45 58.80	45 55.67	23 24 51.6	24 55.2	7.8883	7.943							8 11 33.7
10.2	6 45 47.69	45 44.57	23 25 4.2	25 7.7	7.8868	7.940	+2.00						9 11 29.6
11.2	6 45 36.61	45 33.51	23 25 16.6	25 20.1	7.8851	7.936	2.04						10 11 25.5
12.2	6 45 25.58	45 22.49	23 25 28.9	25 32.3	7.8833	7.932	2.08						11 11 21.4
13.2	6 45 14.60	45 11.52	23 25 41.1	25 44.4	7.8813	7.927	2.11						12 11 17.3
14.2	6 45 3.67	45 0.61	23 25 53.1	25 56.4	7.8791	7.922	2.14						13 11 13.2
15.2	6 44 52.80	44 49.76	23 26 5.0	26 8.3	7.8767	7.917	2.17						14 11 9.1
16.2	6 44 41.99	44 38.97	23 26 16.8	26 20.0	7.8740	7.912	2.20						15 11 5.0
17.2	6 44 31.25	44 28.25	23 26 28.4	26 31.6	7.8711	7.907	2.23						16 11 0.8
18.2	6 44 20.59	44 17.61	23 26 39.9	26 43.1	7.8679	7.901	2.26						17 10 56.7
19.2	6 44 10.00	44 7.04	23 26 51.3	26 54.4	7.8646	7.895	2.29						18 10 52.6
20.2	6 43 59.50	43 56.56	23 27 2.5	27 5.6	7.8612	7.889	2.32						19 10 48.5
21.2	6 43 49.08	43 46.17	23 27 13.5	27 16.6	7.8576	7.883	2.34						20 10 44.4
22.2	6 43 38.75	43 35.87	23 27 24.4	27 27.4	7.8536	7.877	2.36						21 10 40.3
23.2	6 43 28.52	43 25.67	23 27 35.1	27 38.1	7.8494	7.870	2.38						22 10 36.2
24.2	6 43 18.39	43 15.57	23 27 45.6	27 48.5	7.8449	7.863	2.40						23 10 32.1
25.2	6 43 8.37	43 5.58	23 27 56.0	27 58.8	7.8402	7.856	2.42						24 10 28.0
26.2	6 42 58.46	42 55.70	23 28 6.2	28 9.0	7.8353	7.848	2.44						25 10 23.9
27.2	6 42 48.66	42 45.94	23 28 16.2	28 18.9	7.8301	7.840	2.46						26 10 19.8
28.2	6 42 38.98	42 36.30	23 28 26.0	28 28.7	7.8245	7.832	2.48						27 10 15.7
29.2	6 42 29.43	42 26.79	23 28 35.7	28 38.3	7.8186	7.823	2.50						28 10 11.6
30.2	6 42 20.01	42 17.41	23 28 45.2	28 47.7	7.8124	7.814	2.51						29 10 7.6
31.2	6 42 10.73	42 8.16	23 28 54.4	28 57.0	7.8061	7.805	2.52						30 10 3.5
Feb. 1.1	6 42 1.58	41 59.05	23 29 3.5	29 6.0	7.7996	7.796	2.53						31 9 59.4
2.1	6 41 52.57	41 50.09	23 29 12.3	29 14.8	7.7927	7.787	2.54						1 9 55.3
3.1	6 41 43.71	41 41.27	23 29 21.0	29 23.4	7.7855	7.778	2.55						2 9 51.2
4.1	6 41 35.00	41 32.60	23 29 29.5	29 31.8	7.7780	7.768	2.56						3 9 47.2
5.1	6 41 26.44	41 24.08	23 29 37.8	29 40.0	7.7703	7.757	2.57						4 9 43.1
6.1	6 41 18.03	41 15.72	23 29 45.8	29 48.1	7.7621	7.745	2.58						5 9 39.0
7.1	6 41 9.78	41 7.52	23 29 53.7	29 55.9	7.7535	7.734	2.59						6 9 35.0
8.1	6 41 1.71	40 59.49	23 30 1.4	30 3.5	7.7447	7.722	2.60						7 9 30.9
9.1	6 40 53.79	40 51.61	23 30 8.9	30 10.9	7.7356	7.710	2.60						8 9 26.8
10.1	6 40 46.04	40 43.91	23 30 16.1	30 18.1	7.7262	7.698	2.61						9 9 22.8
11.1	6 40 38.46	40 36.38	23 30 23.2	30 25.1	7.7163	7.686	2.62						10 9 18.7
12.1	6 40 31.05	40 29.02	23 30 30.0	30 31.9	7.7059	7.674	2.63						11 9 14.7
13.1	6 40 23.83	40 21.84	23 30 36.6	30 38.4	7.6950	7.661	2.64						12 9 10.6
14.1	6 40 16.78	40 14.85	23 30 43.1	30 44.8	7.6837	7.647	2.65						13 9 6.6
15.1	6 40 9.92	40 8.05	23 30 49.3	30 50.9	7.6719	7.632	2.66						14 9 2.5
16.1	6 40 3.25	40 1.43	23 30 55.3	30 56.9	7.6596	7.616	2.66						15 8 58.5
17.1	6 39 56.77	39 55.00	23 31 1.1	31 2.6	7.6467	7.599	2.67						16 8 54.4
18.1	6 39 50.49	39 48.77	23 31 6.6	31 8.1	7.6331	7.580	2.67						17 8 50.4
19.1	6 39 44.40	39 42.74	23 31 12.0	31 13.4	7.6189	7.562	2.68						18 8 46.3
20.1	6 39 38.51	39 36.91	23 31 17.2	31 18.5	7.6041	7.544	2.68						19 8 42.3
21.1	6 39 32.82	39 31.28	23 31 22.1	31 23.4	7.5887	7.525	2.69						20 8 38.3
22.1	6 39 27.33	39 25.85	23 31 26.8	31 28.1	7.5727	7.505	2.69						21 8 34.3
23.1	6 39 22.05	39 20.63	23 31 31.3	31 32.5	7.5557	7.485	2.70						22 8 30.2
24.1	6 39 16.98	39 15.61	23 31 35.6	31 36.7	7.5378	7.464	2.70						23 8 26.2
25.1	6 39 12.12	39 10.81	23 31 39.7	31 40.7	7.5190	7.441	2.70						24 8 22.2
26.1	6 39 7.47	39 6.21	23 31 43.5	31 44.5	7.4991	7.416	2.71						25 8 18.2
27.1	6 38 58.81	38 57.68	23 31 47.2	31 48.1	7.4777	7.389	2.71						26 8 14.2
28.1	6 38 54.89	38 53.75	23 31 50.6	31 51.5	7.4549	7.360	2.71						27 8 10.2
29.1	6 38 51.05	38 50.04	23 31 56.7	31 57.5	7.4309	7.326	2.72						28 8 6.2
30.1	6 38 47.50	38 46.55	+23 31 59.5	32 0.2	7.4053	7.290	2.72						29 8 2.2
					-7.3781	+7.250	+2.72						30 7 58.2

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.			Apparent Declination.			Log of <i>a</i> .		Log of <i>b</i> .		Mean Solar Time of Meridian Transit.
	At Sidereal Oh.	At Transit.		At Sidereal Oh.	At Transit.		In R.A.	In Dec.	In R.A.	In Dec.	
Mar. d	h m s	m s		° ' "	' "						d h m
1.1	6 38 47.50	38 46.55	+23 31 59.5	32 0.2		-7.3781	+7.250	+2.72			1 7 58.2
2.1	6 38 44.17	38 43.28	23 32 2.0	32 2.6		7.3492	7.208	2.72			2 7 54.3
3.1	6 38 41.06	38 40.24	23 32 4.3	32 4.9		7.3184	7.160	2.73			3 7 50.3
4.0	6 38 38.17	38 37.41	23 32 6.3	32 6.9		7.2851	7.110	2.73			4 7 46.3
5.0	6 38 35.52	38 34.82	23 32 8.2	32 8.7		7.2477	7.057	2.73			5 7 42.3
6.0	6 38 33.09	38 32.45	23 32 9.8	32 10.3		7.2060	7.002	2.73			6 7 38.3
7.0	6 38 30.89	38 30.32	23 32 11.2	32 11.6		7.1606	6.943	2.73			7 7 34.4
8.0	6 38 28.92	38 28.41	23 32 12.4	32 12.7		7.1105	6.875	2.73			8 7 30.4
9.0	6 38 27.17	38 26.73	23 32 13.4	32 13.6		7.0538	6.776	2.74			9 7 26.4
10.0	6 38 25.66	38 25.28	23 32 14.2	32 14.3		6.9876	6.655	2.74			10 7 22.5
11.0	6 38 24.37	38 24.06	23 32 14.7	32 14.8		6.9093	6.475	2.74			11 7 18.5
12.0	6 38 23.32	38 23.07	23 32 15.0	32 15.0		6.8138	+6.164	2.74			12 7 14.6
13.0	6 38 22.50	38 22.31	23 32 15.1	32 15.1		6.6913		2.74			13 7 10.6
14.0	6 38 21.91	38 21.79	23 32 15.0	32 14.9		6.5197	-6.204	2.74			14 7 6.7
15.0	6 38 21.55	38 21.49	23 32 14.7	32 14.5		5.2299	6.485	2.74			15 7 2.8
16.0	6 38 21.42	38 21.42	23 32 14.1	32 13.9		-4.9206	6.668	2.74			16 6 58.8
17.0	6 38 21.52	38 21.59	23 32 13.3	32 13.0		+6.1831	6.796	2.75			17 6 54.9
18.0	6 38 21.86	38 21.99	23 32 12.3	32 12.0		6.5015	6.901	2.75			18 6 51.0
19.0	6 38 22.44	38 22.64	23 32 11.1	32 10.7		6.6846	6.990	2.75			19 6 47.1
20.0	6 38 23.25	38 23.52	23 32 9.7	32 9.2		6.8106	7.040	2.75			20 6 43.2
21.0	6 38 24.30	38 24.63	23 32 8.0	32 7.5		6.9080	7.084	2.75			21 6 39.2
22.0	6 38 25.58	38 25.98	23 32 6.1	32 5.5		6.9875	7.135	2.75			22 6 35.3
23.0	6 38 27.10	38 27.56	23 32 4.0	32 3.4		7.0545	7.184	2.75			23 6 31.4
24.0	6 38 28.85	38 29.37	23 32 1.7	32 1.0		7.1125	7.229	2.74			24 6 27.5
25.0	6 38 30.83	38 31.42	23 31 59.2	31 58.4		7.1636	7.265	2.74			25 6 23.6
26.0	6 38 33.04	38 33.70	23 31 56.4	31 55.6		7.2092	7.300	2.74			26 6 19.7
27.0	6 38 35.49	38 36.21	23 31 53.5	31 52.6		7.2507	7.332	2.74			27 6 15.8
28.0	6 38 38.17	38 38.95	23 31 50.3	31 49.4		7.2881	7.358	2.74			28 6 11.9
29.0	6 38 41.08	38 41.93	23 31 46.9	31 45.9		7.3222	7.384	2.74			29 6 8.1
30.0	6 38 44.22	38 45.13	23 31 43.3	31 42.3		7.3539	7.409	2.73			30 6 4.2
31.0	6 38 47.59	38 48.56	23 31 39.5	31 38.4		7.3833	7.433	2.73			31 6 0.3
Apr. 1.0	6 38 51.18	38 52.22	23 31 35.5	31 34.3		7.4108	7.456	2.73			1 5 56.4
2.0	6 38 55.00	38 56.10	23 31 31.3	31 30.0		7.4365	7.478	2.73			2 5 52.6
3.0	6 38 59.05	39 0.21	23 31 26.8	31 25.5		7.4607	7.499	2.73			3 5 48.7
4.0	6 39 3.32	39 4.54	23 31 22.2	31 20.8		7.4835	7.519	2.73			4 5 44.9
5.0	6 39 7.52	39 9.10	23 31 17.3	31 15.9		7.5051	7.538	2.72			5 5 41.0
6.0	6 39 12.84	39 13.88	23 31 12.2	31 10.8		7.5253	7.556	2.72			6 5 37.1
7.0	6 39 17.48	39 18.88	23 31 6.9	31 5.4		7.5445	7.574	2.72			7 5 33.3
8.0	6 39 22.63	39 24.10	23 31 1.4	30 59.9		7.5630	7.591	2.72			8 5 29.4
8.9	6 39 28.01	39 29.54	23 30 55.7	30 54.1		7.5806	7.607	2.72			9 5 25.6
9.9	6 39 33.60	39 35.19	23 30 49.8	30 48.1		7.5973	7.622	2.71			10 5 21.8
10.9	6 39 39.40	39 41.05	23 30 43.7	30 41.9		7.6134	7.636	2.71			11 5 17.9
11.9	6 39 45.42	39 47.13	23 30 37.3	30 35.5		7.6287	7.650	2.71			12 5 14.1
12.9	6 39 51.65	39 53.42	23 30 30.8	30 28.9		7.6433	7.664	2.71			13 5 10.3
13.9	6 39 58.09	39 59.92	23 30 24.0	30 22.1		7.6575	7.678	2.70			14 5 6.5
14.9	6 40 4.74	40 6.63	23 30 17.1	30 15.1		7.6713	7.691	2.70			15 5 2.6
15.9	6 40 11.60	40 13.55	23 30 9.9	30 7.8		7.6846	7.704	2.70			16 4 58.8
16.9	6 40 18.67	40 20.68	23 30 2.5	30 0.4		7.6972	7.717	2.69			17 4 55.0
17.9	6 40 25.95	40 28.01	23 29 54.9	29 52.7		7.7094	7.729	2.69			18 4 51.2
18.9	6 40 33.42	40 35.54	23 29 47.1	29 44.8		7.7211	7.740	2.69			19 4 47.4
19.9	6 40 41.10	40 43.27	23 29 39.0	29 36.7		7.7324	7.751	2.68			20 4 43.6
20.9	6 40 48.98	40 51.20	23 29 30.8	29 28.4		7.7434	7.762	2.68			21 4 39.7
21.9	6 40 57.05	40 59.33	23 29 22.3	29 19.9		7.7540	7.773	2.67			22 4 36.0
22.9	6 41 5.32	41 7.66	23 29 13.7	29 11.2		7.7642	7.784	2.67			23 4 32.2
23.9	6 41 13.78	41 16.18	23 29 4.8	29 2.3		7.7741	7.794	2.66			24 4 28.4
24.9	6 41 22.44	41 24.89	23 28 55.8	28 53.2		7.7836	7.804	2.66			25 4 24.6
25.9	6 41 31.29	41 33.79	23 28 46.5	28 43.9		7.7929	7.814	2.65			26 4 20.8
26.9	6 41 40.32	41 42.87	23 28 37.0	28 34.3		7.8014	7.824	2.65			27 4 17.0
27.9	6 41 49.54	41 52.14	23 28 27.3	28 24.6		7.8105	7.833	2.64			28 4 13.2
28.9	6 41 58.94	42 1.59	23 28 17.4	28 14.6		7.8189	7.842	2.64			29 4 9.5
29.9	6 42 8.52	42 11.22	23 28 7.3	28 4.4		7.8270	7.851	2.63			30 4 5.7
30.9	6 42 18.27	42 21.03	+23 27 57.0	27 54.0		+7.8349	-7.860	+2.63			31 4 2.0

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of α .		Log of δ .		Mean Solar Time of Meridian Transit.
	At Sidereal Oh.	At Transit.	At Sidereal Oh.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
May	a	h m s	m s	c i s					d h m
	1.9	6 42 28.21	42 31.01	+23 27 46.5	27 43.5	+7.8425	-7.868	+2.62	2 3 58.2
	2.9	6 42 32.31	42 41.17	23 27 35.8	27 32.7	7.8499	7.876	2.62	3 3 54.4
	3.9	6 42 48.59	42 51.50	23 27 24.9	27 21.7	7.8571	7.884	2.61	4 3 50.7
	4.9	6 42 59.04	43 1.90	23 27 13.8	27 10.6	7.8640	7.892	2.60	5 3 46.9
	5.9	6 43 9.65	43 12.65	23 27 2.4	26 59.2	7.8708	7.900	2.60	6 3 43.1
	6.9	6 43 20.43	43 23.47	23 26 50.9	26 47.6	7.8774	7.908	2.59	7 3 39.4
	7.9	6 43 31.37	43 34.45	23 26 39.1	26 35.8	7.8837	7.915	2.59	8 3 35.6
	8.9	6 43 42.46	43 45.59	23 26 27.2	26 23.8	7.8898	7.922	2.58	9 3 31.9
	9.9	6 43 53.71	43 56.89	23 26 15.0	26 11.6	7.8958	7.929	2.57	10 3 28.1
	10.9	6 44 5.12	44 8.34	23 26 2.7	25 59.2	7.9016	7.936	2.56	11 3 24.4
	11.9	6 44 16.68	44 19.94	23 25 50.2	25 46.6	7.9073	7.943	2.55	12 3 20.6
	12.9	6 44 28.38	44 31.69	23 25 37.4	25 33.8	7.9128	7.950	2.55	13 3 16.9
	13.9	6 44 40.23	44 43.58	23 25 24.5	25 20.8	7.9180	7.957	2.54	14 3 13.1
	14.9	6 44 52.23	44 55.62	23 25 11.4	25 7.7	7.9232	7.964	2.54	15 3 9.4
	15.8	6 45 4.37	45 7.80	23 24 58.1	24 54.3	7.9283	7.970	2.53	16 3 5.7
	16.8	6 45 16.64	45 20.12	23 24 44.6	24 40.7	7.9332	7.976	2.52	17 3 2.0
	17.8	6 45 29.06	45 32.58	23 24 30.8	24 26.9	7.9380	7.982	2.51	18 2 58.2
	18.8	6 45 41.62	45 45.17	23 24 16.9	24 13.0	7.9427	7.988	2.50	19 2 54.5
	19.8	6 45 54.30	45 57.89	23 24 2.8	23 58.8	7.9471	7.994	2.49	20 2 50.8
	20.8	6 46 7.12	46 10.75	23 23 48.5	23 44.4	7.9515	8.000	2.48	21 2 47.1
	21.8	6 46 20.06	46 23.73	23 23 34.0	23 29.9	7.9558	8.006	2.47	22 2 43.4
	22.8	6 46 33.12	46 36.83	23 23 19.4	23 15.2	7.9598	8.012	2.46	23 2 39.6
	23.8	6 46 46.31	46 50.05	23 23 4.5	23 0.3	7.9637	8.018	2.45	24 2 35.9
	24.8	6 46 59.62	47 3.39	23 22 49.5	22 45.2	7.9675	8.023	2.44	25 2 32.2
	25.8	6 47 13.04	47 16.85	23 22 34.2	22 29.9	7.9712	8.028	2.43	26 2 28.5
	26.8	6 47 26.57	47 30.41	23 22 18.8	22 14.4	7.9746	8.033	2.42	27 2 24.8
	27.8	6 47 40.20	47 44.08	23 22 3.2	21 58.7	7.9780	8.038	2.40	28 2 21.1
	28.8	6 47 53.94	47 57.85	23 21 47.4	21 42.8	7.9813	8.043	2.39	29 2 17.4
	29.8	6 48 7.78	48 11.73	23 21 31.4	21 26.8	7.9845	8.048	2.38	30 2 13.7
	30.8	6 48 21.73	48 25.70	23 21 15.3	21 10.6	7.9876	8.053	2.37	31 2 10.0
June	31.8	6 48 35.77	48 39.77	23 20 59.0	20 54.3	7.9905	8.057	2.36	1 2 6.3
	1.8	6 48 49.91	48 53.94	23 20 42.5	20 37.7	7.9934	8.062	2.34	2 2 2.6
	2.8	6 49 4.14	49 8.20	23 20 25.8	20 21.0	7.9962	8.067	2.33	3 1 58.9
	3.8	6 49 18.46	49 22.55	23 20 9.0	20 4.1	7.9990	8.071	2.32	4 1 55.2
	4.8	6 49 32.87	49 36.99	23 19 52.0	19 47.1	8.0016	8.075	2.30	5 1 51.5
	5.8	6 49 47.36	49 51.51	23 19 34.8	19 29.9	8.0042	8.079	2.29	6 1 47.8
	6.8	6 50 1.95	50 6.12	23 19 17.5	19 12.5	8.0067	8.083	2.27	7 1 44.1
	7.8	6 50 16.61	50 20.81	23 19 0.0	18 54.9	8.0090	8.087	2.26	8 1 40.4
	8.8	6 50 31.35	50 35.57	23 18 42.3	18 37.2	8.0112	8.091	2.24	9 1 36.8
	9.8	6 50 46.17	50 50.41	23 18 24.5	18 19.3	8.0134	8.095	2.23	10 1 33.1
	10.8	6 51 1.06	51 5.32	23 18 6.5	18 1.3	8.0154	8.099	2.22	11 1 29.4
	11.8	6 51 16.01	51 20.30	23 17 48.4	17 43.2	8.0174	8.103	2.20	12 1 25.7
	12.8	6 51 31.03	51 35.34	23 17 30.1	17 24.9	8.0192	8.107	2.18	13 1 22.0
	13.8	6 51 46.12	51 50.44	23 17 11.7	17 6.4	8.0209	8.110	2.16	14 1 18.3
	14.8	6 52 1.26	52 5.60	23 16 53.1	16 47.8	8.0226	8.113	2.13	15 1 14.7
	15.8	6 52 16.46	52 20.82	23 16 34.4	16 29.0	8.0242	8.116	2.11	16 1 11.0
	16.8	6 52 31.71	52 36.08	23 16 15.6	16 10.1	8.0256	8.119	2.08	17 1 7.3
	17.8	6 52 47.01	52 51.40	23 15 56.6	15 51.1	8.0269	8.122	2.05	18 1 3.6
	18.8	6 53 2.35	53 6.76	23 15 37.5	15 31.9	8.0282	8.125	2.02	19 0 59.9
	19.8	6 53 17.74	53 22.16	23 15 18.2	15 12.7	8.0295	8.128	+1.99	20 0 56.3
	20.8	6 53 33.17	53 37.61	23 14 58.9	14 53.3	8.0306	8.131		21 0 52.6
	21.8	6 53 48.64	53 53.09	23 14 39.4	14 33.8	8.0316	8.134		22 0 48.9
	22.8	6 54 4.14	54 8.60	23 14 19.8	14 14.1	8.0326	8.137		23 0 45.2
	23.7	6 54 19.68	54 24.15	23 14 0.1	13 54.3	8.0334	8.140		24 0 41.6
	24.7	6 54 35.25	54 39.73	23 13 40.2	13 34.4	8.0342	8.142		25 0 37.9
	25.7	6 54 50.84	54 55.33	23 13 20.2	13 14.4	8.0349	8.144		26 0 34.2
	26.7	6 55 6.45	55 10.96	23 13 0.1	12 54.3	8.0355	8.147		27 0 30.6
	27.7	6 55 22.09	55 26.60	23 12 39.9	12 34.0	8.0360	8.149		28 0 26.9
	28.7	6 55 37.74	55 42.26	23 12 19.6	12 13.7	8.0364	8.151		29 0 23.2
	29.7	6 55 53.41	55 57.94	23 11 59.2	11 53.2	8.0368	8.153		30 0 19.5
	30.7	6 56 9.09	56 13.63	23 11 38.7	11 32.7	8.0371	8.155		31 0 15.9
	31.7	6 56 24.78	56 29.32	+23 11 18.1	11 12.1	+8.0373	-8.157		32 0 12.2

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of a .		Log of b .		Mean Solar Time of Meridian Transit.
	At Sidereal Oh.	At Transit.	At Sidereal Oh.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
July	d h m s	m s	+23 11 18.1	11 12.1	+8.0373	-8.157			d h m
1.7	6 56 24.78	56 29.32	23 10 57.4	10 51.4	8.0374	8.159			2 0 12.2
2.7	6 56 40.48	56 45.02	23 10 36.6	10 30.6	8.0374	8.161			3 0 8.5
3.7	6 56 56.17	57 0.72	23 10 15.8	10 9.7	8.0374	8.163			4 0 4.9
4.7	6 57 11.87	57 16.42	23 9 54.8	9 48.7	8.0373	8.164			5 0 1.2
5.7	6 57 27.57	57 32.12	23 9 33.8	9 27.7	8.0372	8.166			5 23 57.5
6.7	6 57 43.26	57 47.81	23 9 12.7	9 6.6	8.0370	8.167			6 23 53.8
7.7	6 57 58.95	58 3.50	23 8 51.5	8 45.4	8.0367	8.168			7 23 50.2
8.7	6 58 14.63	58 19.17	23 8 30.4	8 24.2	8.0363	8.169			8 23 46.5
9.7	6 58 30.29	58 34.83	23 8 9.1	8 2.9	8.0359	8.170			9 23 42.8
10.7	6 58 45.94	58 50.48	23 7 47.8	7 41.6	8.0353	8.171			10 23 39.2
11.7	6 59 1.57	59 6.10	23 7 26.5	7 20.3	8.0347	8.172			11 23 35.5
12.7	6 59 17.17	59 21.70	23 7 5.1	6 58.9	8.0339	8.173			12 23 31.8
13.7	6 59 32.76	59 37.28	23 6 43.7	6 37.4	8.0330	8.174			13 23 28.1
14.7	6 59 48.31	59 52.83	23 6 22.2	6 15.9	8.0321	8.175			14 23 24.5
15.7	7 0 3.83	0 8.35	23 6 0.7	5 54.4	8.0312	8.175			15 23 20.8
16.7	7 0 19.32	0 23.83	23 5 39.1	5 32.8	8.0302	8.175			16 23 17.1
17.7	7 0 34.77	0 39.27	23 5 17.6	5 11.2	8.0289	8.176			17 23 13.5
18.7	7 0 50.18	0 54.68	23 4 56.0	4 49.7	8.0277	8.176			18 23 9.8
19.7	7 1 5.55	1 10.04	23 4 34.5	4 28.2	8.0263	8.176			19 23 6.1
20.7	7 1 20.88	1 25.35	23 4 13.0	4 6.7	8.0249	8.176	-2.00		20 23 2.4
21.7	7 1 36.15	1 40.62	23 3 51.5	3 45.1	8.0234	8.175	2.04		21 22 58.7
22.7	7 1 51.38	1 55.83	23 3 29.9	3 23.6	8.0218	8.175	2.07		22 22 55.1
23.7	7 2 6.55	2 10.98	23 3 8.4	3 2.1	8.0202	8.175	2.10		23 22 51.4
24.7	7 2 21.66	2 26.08	23 2 46.9	2 40.5	8.0182	8.175	2.13		24 22 47.7
25.7	7 2 36.71	2 41.12	23 2 25.4	2 19.1	8.0163	8.174	2.16		25 22 44.0
26.7	7 2 51.70	2 56.09	23 2 3.9	1 57.6	8.0144	8.174	2.19		26 22 40.3
27.7	7 3 6.61	3 10.99	23 1 42.5	1 36.2	8.0123	8.173	2.22		27 22 36.7
28.6	7 3 21.46	3 25.82	23 1 21.1	1 14.9	8.0101	8.172	2.25		28 22 33.0
29.6	7 3 36.24	3 40.57	23 0 59.8	0 53.6	8.0079	8.171	2.27		29 22 29.3
30.6	7 3 50.94	3 55.26	23 0 38.6	0 32.3	8.0055	8.170	2.29		30 22 25.6
31.6	7 4 5.57	4 9.86	23 0 17.4	0 11.1	8.0031	8.169	2.30		31 22 21.9
Aug. 1.6	7 4 20.11	4 24.38	22 59 56.2	59 50.0	8.0006	8.168	2.32		1 22 18.2
2.6	7 4 34.57	4 38.82	22 59 35.1	59 28.9	7.9979	8.167	2.33		2 22 14.5
3.6	7 4 48.95	4 53.18	22 59 14.0	59 7.8	7.9952	8.165	2.35		3 22 10.8
4.6	7 5 3.24	5 7.44	22 58 53.0	58 46.8	7.9925	8.164	2.36		4 22 7.2
5.6	7 5 17.45	5 21.61	22 58 32.1	58 26.0	7.9896	8.162	2.37		5 22 3.5
6.6	7 5 31.54	5 35.69	22 58 11.3	58 5.2	7.9866	8.160	2.38		6 21 59.8
7.6	7 5 45.55	5 49.67	22 57 50.7	57 44.5	7.9835	8.158	2.39		7 21 56.1
8.6	7 5 59.47	6 3.56	22 57 30.1	57 24.0	7.9802	8.156	2.40		8 21 52.4
9.6	7 6 13.28	6 17.34	22 57 9.6	57 3.5	7.9770	8.154	2.41		9 21 48.7
10.6	7 6 26.99	6 31.02	22 56 49.2	56 43.1	7.9735	8.152	2.42		10 21 44.9
11.6	7 6 40.59	6 44.59	22 56 29.0	56 23.0	7.9698	8.150	2.43		11 21 41.2
12.6	7 6 54.08	6 58.05	22 56 8.8	56 2.9	7.9663	8.147	2.44		12 21 37.5
13.6	7 7 7.46	7 11.40	22 55 48.8	55 42.9	7.9622	8.144	2.45		13 21 33.8
14.6	7 7 20.73	7 24.64	22 55 28.8	55 23.0	7.9583	8.141	2.46		14 21 30.1
15.6	7 7 33.87	7 37.75	22 55 9.1	55 3.3	7.9542	8.138	2.47		15 21 26.4
16.6	7 7 46.89	7 50.73	22 54 49.5	54 43.7	7.9500	8.135	2.48		16 21 22.7
17.6	7 7 59.79	8 3.60	22 54 30.1	54 24.4	7.9457	8.132	2.49		17 21 19.0
18.6	7 8 12.56	8 16.33	22 54 10.9	54 5.2	7.9413	8.129	2.50		18 21 15.2
19.6	7 8 25.21	8 28.94	22 53 51.8	53 46.2	7.9368	8.125	2.51		19 21 11.5
20.6	7 8 37.72	8 41.42	22 53 32.9	53 27.3	7.9319	8.121	2.52		20 21 7.8
21.6	7 8 50.10	8 53.76	22 53 14.2	53 8.6	7.9270	8.117	2.53		21 21 4.1
22.6	7 9 2.35	9 5.96	22 52 55.6	52 50.1	7.9219	8.113	2.53		22 21 0.3
23.6	7 9 14.45	9 18.03	22 52 37.2	52 31.8	7.9165	8.108	2.54		23 20 56.6
24.6	7 9 26.41	9 29.94	22 52 19.0	52 13.7	7.9112	8.103	2.55		24 20 52.9
25.6	7 9 38.22	9 41.71	22 52 1.0	51 55.8	7.9057	8.097	2.55		25 20 49.1
26.6	7 9 49.88	9 53.33	22 51 43.3	51 38.1	7.9000	8.091	2.56		26 20 45.4
27.6	7 10 1.40	10 4.80	22 51 25.8	51 20.6	7.8942	8.085	2.57		27 20 41.6
28.6	7 10 12.76	10 16.12	22 51 8.5	51 3.4	7.8882	8.079	2.57		28 20 37.9
29.6	7 10 23.97	10 27.29	22 50 51.5	50 46.5	7.8819	8.073	2.58		29 20 34.2
30.6	7 10 35.02	10 38.29	+22 50 34.7	50 29.7	+7.8756	-8.067	-2.58		30 20 30.4
31.6	7 10 45.92	10 49.14							31 20 26.7

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.												
Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of α .		Log of δ .		Mean Solar Time of Meridian Transit.			
	At Sidereal Oh.	At Transit.	At Sidereal Oh.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	d	h	m	
Sept. 1.6	7 10 56.65	10 59.83	+22 50' 18.1"	50' 13.2"	+7.8690	-8.061	-2.59		1	20	22.9	
2.6	7 11 7.22	11 10.35	22 50 1.7	49 56.9	7.8622	8.054	2.59		2	20	19.2	
3.5	7 11 17.62	11 20.70	22 49 45.6	49 40.8	7.8553	8.047	2.60		3	20	15.4	
4.5	7 11 27.86	11 30.89	22 49 29.7	49 25.0	7.8482	8.040	2.60		4	20	11.6	
5.5	7 11 37.93	11 40.91	22 49 14.1	49 9.5	7.8410	8.033	2.61		5	20	7.9	
6.5	7 11 47.83	11 50.76	22 48 58.7	48 54.3	7.8334	8.026	2.61		6	20	4.1	
7.5	7 11 57.55	12 0.43	22 48 43.7	48 39.3	7.8255	8.018	2.62		7	20	0.3	
8.5	7 12 7.10	12 9.92	22 48 28.9	48 24.6	7.8175	8.010	2.63		8	19	56.6	
9.5	7 12 16.47	12 19.24	22 48 14.4	48 10.2	7.8092	8.001	2.63		9	19	52.8	
10.5	7 12 25.66	12 28.37	22 48 0.2	47 56.1	7.8005	7.992	2.64		10	19	49.0	
11.5	7 12 34.66	12 37.32	22 47 46.3	47 42.2	7.7916	7.982	2.64		11	19	45.2	
12.5	7 12 43.48	12 46.09	22 47 32.7	47 28.7	7.7823	7.972	2.65		12	19	41.4	
13.5	7 12 52.11	12 54.66	22 47 19.3	47 15.4	7.7726	7.962	2.65		13	19	37.7	
14.5	7 13 0.54	13 3.04	22 47 6.3	47 2.5	7.7627	7.952	2.66		14	19	33.9	
15.5	7 13 8.78	13 11.23	22 46 53.6	46 49.9	7.7525	7.942	2.66		15	19	30.1	
16.5	7 13 16.83	13 19.22	22 46 41.2	46 37.6	7.7420	7.932	2.67		16	19	26.3	
17.5	7 13 24.68	13 27.01	22 46 29.2	46 25.7	7.7311	7.920	2.67		17	19	22.5	
18.5	7 13 32.34	13 34.60	22 46 17.5	46 14.1	7.7199	7.909	2.68		18	19	18.7	
19.5	7 13 39.79	13 42.00	22 46 6.2	46 2.9	7.7081	7.897	2.68		19	19	14.9	
20.5	7 13 47.05	13 49.19	22 45 55.2	45 52.0	7.6960	7.883	2.69		20	19	11.0	
21.5	7 13 54.10	13 56.18	22 45 44.5	45 41.4	7.6835	7.868	2.69		21	19	7.2	
22.5	7 14 0.94	14 2.96	22 45 34.1	45 31.0	7.6705	7.852	2.69		22	19	3.4	
23.5	7 14 7.58	14 9.54	22 45 24.1	45 21.2	7.6568	7.835	2.70		23	18	59.6	
24.5	7 14 14.01	14 15.91	22 45 14.5	45 11.7	7.6426	7.818	2.70		24	18	55.8	
25.5	7 14 20.23	14 22.06	22 45 5.2	45 2.5	7.6277	7.800	2.70		25	18	52.0	
26.5	7 14 26.23	14 28.00	22 44 56.3	44 53.8	7.6124	7.781	2.71		26	18	48.1	
27.5	7 14 32.03	14 33.73	22 44 47.8	44 45.4	7.5963	7.761	2.71		27	18	44.3	
28.5	7 14 37.60	14 39.24	22 44 39.7	44 37.4	7.5798	7.742	2.71		28			

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of α .		Log of δ .		Mean Solar Time of Meridian Transit.
	At Sidereal Oh.	At Transit.	At Sidereal Oh.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
Nov. 1.4	d h m s	m s	+22 44 2.0	44 3.8	-7.1962	+7.611	-2.73		d h m
2.4	7 15 33.32	15 32.63	22 44 8.1	44 10.0	7.2377	7.641	2.73		1 16 27.7
3.4	7 15 30.95	15 30.18	22 44 14.6	44 16.6	7.2754	7.669	2.73		2 16 23.7
4.4	7 15 28.35	15 27.51	22 44 21.4	44 23.6	7.3096	7.694	2.72		3 16 19.7
5.4	7 15 25.52	15 24.62	22 44 28.7	44 31.0	7.3411	7.716	2.72		4 16 15.8
6.4	7 15 22.47	15 21.50	22 44 36.3	44 38.7	7.3705	7.736	2.72		5 16 11.8
7.4	7 15 19.20	15 18.17	22 44 44.3	44 46.9	7.3978	7.755	2.72		6 16 7.8
8.4	7 15 15.71	15 14.61	22 44 52.7	44 55.3	7.4234	7.774	2.72		7 16 3.8
9.4	7 15 12.00	15 10.84	22 45 1.5	45 4.2	7.4473	7.792	2.71		8 15 59.8
10.4	7 15 8.08	15 6.84	22 45 10.6	45 13.4	7.4698	7.809	2.71		9 15 55.8
11.4	7 15 3.94	15 2.64	22 45 20.1	45 23.0	7.4913	7.826	2.71		10 15 51.8
12.4	7 14 59.58	14 58.22	22 45 29.9	45 33.0	7.5120	7.843	2.70		11 15 47.8
13.4	7 14 55.01	14 53.58	22 45 40.1	45 43.3	7.5317	7.859	2.70		12 15 43.8
14.4	7 14 50.22	14 48.73	22 45 50.7	45 54.0	7.5496	7.874	2.70		13 15 39.8
15.3	7 14 45.22	14 43.67	22 46 1.6	46 5.0	7.5668	7.888	2.69		14 15 35.8
16.3	7 14 40.01	14 38.40	22 46 12.9	46 16.4	7.5831	7.901	2.69		15 15 31.8
17.3	7 14 34.59	14 32.92	22 46 24.5	46 28.1	7.5987	7.913	2.68		16 15 27.8
18.3	7 14 28.98	14 27.25	22 46 36.5	46 40.1	7.6136	7.925	2.68		17 15 23.7
19.3	7 14 23.16	14 21.37	22 46 48.7	46 52.5	7.6278	7.936	2.67		18 15 19.7
20.3	7 14 17.15	14 15.30	22 47 1.2	47 5.1	7.6414	7.946	2.67		19 15 15.7
21.3	7 14 10.94	14 9.03	22 47 14.1	47 18.1	7.6544	7.956	2.66		20 15 11.7
22.3	7 14 4.54	14 2.57	22 47 27.3	47 31.3	7.6668	7.966	2.66		21 15 7.6
23.3	7 13 57.95	13 55.92	22 47 40.8	47 44.9	7.6787	7.975	2.65		22 15 3.6
24.3	7 13 51.17	13 49.09	22 47 54.5	47 58.8	7.6901	7.984	2.64		23 14 59.5
25.3	7 13 44.21	13 42.08	22 48 8.6	48 12.9	7.7010	7.993	2.63		24 14 55.5
26.3	7 13 37.06	13 34.88	22 48 22.9	48 27.3	7.7115	8.001	2.62		25 14 51.4
27.3	7 13 29.74	13 27.51	22 48 37.5	48 42.0	7.7215	8.009	2.61		26 14 47.4
28.3	7 13 22.25	13 19.96	22 48 52.3	48 56.9	7.7311	8.016	2.60		27 14 43.3
29.3	7 13 14.58	13 12.24	22 49 7.4	49 12.0	7.7404	8.023	2.59		28 14 39.3
30.3	7 13 6.74	13 4.35	22 49 22.8	49 27.4	7.7492	8.030	2.58		29 14 35.2
Dec. 1.3	7 12 58.74	12 56.30	22 49 38.3	49 43.1	7.7577	8.037	2.57		30 14 31.1
2.3	7 12 50.57	12 48.08	22 49 54.1	49 59.0	7.7660	8.044	2.56		1 14 27.0
3.3	7 12 42.25	12 39.72	22 50 10.2	50 15.1	7.7740	8.050	2.55		2 14 23.0
4.3	7 12 33.77	12 31.19	22 50 26.4	50 31.4	7.7816	8.055	2.54		3 14 18.9
5.3	7 12 25.13	12 22.51	22 50 42.9	50 47.9	7.7890	8.060	2.53		4 14 14.8
6.3	7 12 16.35	12 13.68	22 50 59.5	51 4.6	7.7959	8.065	2.52		5 14 10.7
7.3	7 12 7.42	12 4.71	22 51 16.4	51 21.5	7.8025	8.070	2.51		6 14 6.6
8.3	7 11 58.35	11 55.60	22 51 33.4	51 38.5	7.8089	8.074	2.50		7 14 2.5
9.3	7 11 49.14	11 46.35	22 51 50.6	51 55.8	7.8150	8.078	2.48		8 13 58.4
10.3	7 11 39.80	11 36.97	22 52 7.9	52 13.2	7.8209	8.082	2.47		9 13 54.3
11.3	7 11 30.33	11 27.47	22 52 25.4	52 30.7	7.8265	8.086	2.45		10 13 50.2
12.3	7 11 20.74	11 17.84	22 52 43.0	52 48.4	7.8318	8.090	2.44		11 13 46.1
13.3	7 11 11.02	11 8.08	22 53 0.8	53 6.2	7.8369	8.093	2.42		12 13 42.0
14.3	7 11 1.18	10 58.21	22 53 18.7	53 24.1	7.8417	8.096	2.40		13 13 37.9
15.3	7 10 51.24	10 48.24	22 53 36.8	53 42.2	7.8463	8.099	2.39		14 13 33.8
16.3	7 10 41.18	10 38.15	22 53 54.9	54 0.4	7.8506	8.102	2.37		15 13 29.7
17.3	7 10 31.02	10 27.96	22 54 13.2	54 18.6	7.8546	8.104	2.35		16 13 25.5
18.3	7 10 20.76	10 17.68	22 54 31.5	54 37.0	7.8584	8.106	2.33		17 13 21.4
19.3	7 10 10.42	10 7.30	22 54 49.9	54 55.4	7.8620	8.108	2.30		18 13 17.3
20.3	7 9 59.98	9 56.84	22 55 8.3	55 13.9	7.8653	8.110	2.27		19 13 13.2
21.2	7 9 49.46	9 46.30	22 55 26.9	55 32.4	7.8684	8.111	2.24		20 13 9.0
22.2	7 9 38.86	9 35.68	22 55 45.5	55 51.0	7.8714	8.112	2.21		21 13 4.9
23.2	7 9 28.18	9 24.98	22 56 4.1	56 9.7	7.8741	8.112	2.18		22 13 0.8
24.2	7 9 17.44	9 14.22	22 56 22.8	56 28.4	7.8767	8.113	2.14		23 12 56.7
25.2	7 9 6.63	9 3.39	22 56 41.5	56 47.1	7.8791	8.113	2.10		24 12 52.5
26.2	7 8 55.75	8 52.51	22 57 0.3	57 5.8	7.8811	8.114	2.06		25 12 48.4
27.2	7 8 44.83	8 41.57	22 57 19.0	57 24.6	7.8828	8.114	-2.02		26 12 44.3
28.2	7 8 33.85	8 30.58	22 57 37.7	57 43.3	7.8844	8.114			27 12 40.1
29.2	7 8 22.84	8 19.55	22 57 56.5	58 2.0	7.8859	8.114			28 12 36.0
30.2	7 8 11.78	8 8.49	22 58 15.2	58 20.7	7.8871	8.113			29 12 31.9
31.2	7 8 0.69	7 57.39	22 58 33.8	58 39.3	7.8880	8.113			30 12 27.7
32.2	7 7 49.57	7 46.27	22 58 52.4	58 57.9	-7.8887	+8.113			31 12 23.6
32.2	7 7 38.44	7 35.13							32 12 19.5

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of α .		Log of δ .		Mean Solar Time of Meridian Transit.
	At Sidereal Oh.	At Transit.	At Sidereal Oh.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
Jan. d	^h ^m ^s	^m ^s	[°] ['] ["]	[°] ['] ["]					^d ^h ^m
0.2	0 47 46.28	47 46.31	+ 3 23 20.9	23 21.2	+6.8170	+7.807	+2.50	+3.33	0 6 8.2
1.2	0 47 47.28	47 47.31	3 23 30.5	23 30.8	6.8731	7.844	2.50	3.33	1 6 4.3
2.2	0 47 48.42	47 48.46	3 23 41.0	23 41.4	6.9244	7.879	2.50	3.32	2 6 0.3
3.2	0 47 49.70	47 49.74	3 23 52.6	23 53.0	6.9680	7.909	2.50	3.32	3 5 56.4
4.2	0 47 51.09	47 51.13	3 24 4.6	24 5.0	7.0064	7.936	2.50	3.32	4 5 52.5
5.2	0 47 52.61	47 52.66	3 24 17.5	24 17.9	7.0417	7.962	2.49	3.32	5 5 48.6
6.2	0 47 54.26	47 54.31	3 24 31.1	24 31.6	7.0743	7.988	2.49	3.31	6 5 44.7
7.2	0 47 56.04	47 56.09	3 24 45.7	24 46.2	7.1047	8.013	2.49	3.31	7 5 40.8
8.2	0 47 57.94	47 58.00	3 25 1.0	25 1.5	7.1331	8.035	2.49	3.31	8 5 36.9
9.2	0 47 59.96	48 0.02	3 25 17.1	25 17.6	7.1597	8.056	2.49	3.30	9 5 33.0
10.2	0 48 2.10	48 2.17	3 25 33.9	25 34.5	7.1848	8.076	2.48	3.30	10 5 29.1
11.2	0 48 4.37	48 4.44	3 25 51.5	25 52.1	7.2096	8.095	2.48	3.29	11 5 25.2
12.2	0 48 6.76	48 6.84	3 26 9.8	26 10.4	7.2310	8.114	2.48	3.29	12 5 21.3
13.2	0 48 9.27	48 9.35	3 26 29.0	26 29.6	7.2524	8.132	2.48	3.29	13 5 17.4
14.2	0 48 11.90	48 11.99	3 26 48.8	26 49.5	7.2729	8.149	2.48	3.28	14 5 13.5
15.2	0 48 14.65	48 14.74	3 27 9.6	27 10.3	7.2922	8.165	2.47	3.28	15 5 9.6
16.2	0 48 17.53	48 17.63	3 27 31.1	27 31.8	7.3108	8.180	2.47	3.27	16 5 5.7
17.2	0 48 20.54	48 20.64	3 27 53.4	27 54.1	7.3284	8.195	2.47	3.27	17 5 1.9
18.2	0 48 23.67	48 23.78	3 28 16.4	28 17.2	7.3455	8.209	2.47	3.26	18 4 58.0
19.2	0 48 26.93	48 27.04	3 28 40.2	28 41.0	7.3621	8.222	2.47	3.26	19 4 54.1
20.2	0 48 30.31	48 30.43	3 29 4.6	29 5.4	7.3775	8.235	2.47	3.25	20 4 50.2
21.2	0 48 33.81	48 33.93	3 29 29.8	29 30.6	7.3923	8.247	2.46	3.25	21 4 46.4
22.2	0 48 37.42	48 37.54	3 29 55.6	29 56.5	7.4065	8.259	2.46	3.24	22 4 42.5
23.2	0 48 41.14	48 41.27	3 30 22.3	30 23.2	7.4203	8.271	2.46	3.24	23 4 38.6
24.2	0 48 44.98	48 45.11	3 30 49.6	30 50.5	7.4334	8.283	2.46	3.23	24 4 34.7
25.2	0 48 48.94	48 49.07	3 31 17.7	31 18.6	7.4460	8.294	2.45	3.23	25 4 30.9
26.1	0 48 53.02	48 53.16	3 31 46.4	31 47.4	7.4582	8.305	2.45	3.22	26 4 27.0
27.1	0 48 57.22	48 57.36	3 32 15.8	32 16.8	7.4700	8.315	2.45	3.22	27 4 23.1
28.1	0 49 1.53	49 1.68	3 32 45.9	32 46.9	7.4812	8.325	2.45	3.21	28 4 19.2
29.1	0 49 5.94	49 6.09	3 33 16.7	33 17.7	7.4920	8.334	2.44	3.21	29 4 15.4
30.1	0 49 10.46	49 10.61	3 33 48.2	33 49.3	7.5024	8.343	2.44	3.20	30 4 11.5
31.1	0 49 15.09	49 15.25	3 34 20.2	34 21.3	7.5123	8.352	2.43	3.20	31 4 7.7
Feb. 1.1	0 49 19.83	49 19.99	3 34 52.9	34 54.0	7.5220	8.360	2.43	3.19	1 4 3.8
2.1	0 49 24.67	49 24.83	3 35 26.3	35 27.4	7.5313	8.368	2.42	3.19	2 4 0.0
3.1	0 49 29.62	49 29.79	3 36 0.2	36 1.4	7.5404	8.376	2.42	3.18	3 3 56.1
4.1	0 49 34.67	49 34.84	3 36 34.8	36 36.0	7.5493	8.384	2.41	3.18	4 3 52.3
5.1	0 49 39.83	49 40.01	3 37 10.1	37 11.3	7.5577	8.392	2.41	3.17	5 3 48.4
6.1	0 49 45.09	49 45.27	3 37 45.9	37 47.1	7.5659	8.399	2.40	3.17	6 3 44.6
7.1	0 49 50.44	49 50.62	3 38 22.2	38 23.5	7.5739	8.406	2.39	3.16	7 3 40.7
8.1	0 49 55.89	49 56.08	3 38 59.2	39 0.5	7.5818	8.413	2.38	3.16	8 3 36.9
9.1	0 50 1.45	50 1.64	3 39 36.8	39 38.1	7.5894	8.420	2.38	3.15	9 3 33.1
10.1	0 50 7.10	50 7.29	3 40 15.0	40 16.3	7.5968	8.426	2.37	3.15	10 3 29.3
11.1	0 50 12.84	50 13.04	3 40 53.6	40 55.0	7.6040	8.432	2.36	3.14	11 3 25.4
12.1	0 50 18.67	50 18.87	3 41 32.9	41 34.3	7.6109	8.438	2.35	3.13	12 3 21.6
13.1	0 50 24.59	50 24.80	3 42 12.6	42 14.0	7.6177	8.444	2.35	3.13	13 3 17.7
14.1	0 50 30.60	50 30.81	3 42 52.8	42 54.2	7.6243	8.450	2.34	3.12	14 3 13.9
15.1	0 50 36.70	50 36.91	3 43 33.6	43 35.0	7.6307	8.455	2.33	3.11	15 3 10.0
16.1	0 50 42.89	50 43.11	3 44 15.0	44 16.4	7.6367	8.460	2.32	3.10	16 3 6.2
17.1	0 50 49.17	50 49.39	3 44 56.8	44 58.3	7.6428	8.465	2.32	3.09	17 3 2.4
18.1	0 50 55.54	50 55.76	3 45 39.1	45 40.6	7.6487	8.470	2.31	3.08	18 2 58.6
19.1	0 51 1.99	51 2.22	3 46 21.9	46 23.4	7.6544	8.475	2.30	3.07	19 2 54.7
20.1	0 51 8.52	51 8.75	3 47 5.1	47 6.6	7.6598	8.480	2.29	3.06	20 2 50.9
21.1	0 51 15.14	51 15.37	3 47 48.8	47 50.3	7.6650	8.484	2.28	3.05	21 2 47.1
22.1	0 51 21.83	51 22.07	3 48 33.0	48 34.6	7.6700	8.488	2.27	3.04	22 2 43.3
23.1	0 51 28.59	51 28.83	3 49 17.6	49 19.2	7.6748	8.492	2.26	3.03	23 2 39.5
24.1	0 51 35.44	51 35.69	3 50 2.6	50 4.2	7.6792	8.496	2.25	3.01	24 2 35.7
25.1	0 51 42.36	51 42.61	3 50 48.0	50 49.6	7.6836	8.500	2.24	3.00	25 2 31.9
26.1	0 51 49.35	51 49.60	3 51 33.8	51 35.4	7.6879	8.504	2.23	2.99	26 2 28.1
27.1	0 51 56.40	51 56.66	3 52 19.9	52 21.6	7.6920	8.508	2.22	2.98	27 2 24.2
28.1	0 52 3.51	52 3.77	3 53 6.5	53 8.2	7.6960	8.512	2.20	2.96	28 2 20.4
29.1	0 52 10.70	52 10.96	3 53 53.4	53 55.1	7.7000	8.515	2.19	2.95	29 2 16.6
30.1	0 52 17.95	52 18.22	+ 3 54 40.6	54 42.3	+7.7039	+8.518	+2.18	+2.94	30 2 12.8

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of a.		Log of b.		Mean Solar Time of Meridian Transit.
	At Sidereal Oh.	At Transit.	At Sidereal Oh.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
Mar. d	h m s	m s	+ ° ' "	° ' "					d h m
1.1	0 52 17.95	52 18.22	+ 3 54 40.6	54 42.3	+7.7039	+8.518	+2.18	+2.94	1 2 12.8
2.1	0 52 25.26	52 25.53	3 55 28.2	55 29.9	7.7076	8.521	2.17	2.92	2 2 9.0
3.1	0 52 32.63	52 32.90	3 56 16.2	56 17.9	7.7112	8.524	2.15	2.90	3 2 5.2
4.0	0 52 40.07	52 40.34	3 57 4.4	57 6.1	7.7147	8.527	2.14	2.89	4 2 1.4
5.0	0 52 47.56	52 47.84	3 57 52.9	57 54.7	7.7181	8.530	2.13	2.87	5 1 57.6
6.0	0 52 55.10	52 55.38	3 58 41.8	58 43.6	7.7213	8.532	2.12	2.86	6 1 53.8
7.0	0 53 2.71	53 2.99	3 59 30.9	59 32.7	7.7242	8.534	2.10	2.84	7 1 50.0
8.0	0 53 10.37	53 10.65	4 0 20.2	0 22.0	7.7271	8.536	2.09	2.82	8 1 46.2
9.0	0 53 18.08	53 18.37	4 1 9.8	1 11.6	7.7299	8.538	2.08	2.80	9 1 42.4
10.0	0 53 25.84	53 26.13	4 1 59.7	2 1.5	7.7325	8.540	2.06	2.77	10 1 38.6
11.0	0 53 33.63	53 33.93	4 2 49.7	2 51.6	7.7351	8.542	2.04	+2.72	11 1 34.8
12.0	0 53 41.48	53 41.78	4 3 40.1	3 42.0	7.7376	8.544	2.02		12 1 31.0
13.0	0 53 49.37	53 49.67	4 4 30.7	4 32.6	7.7400	8.546	2.00		13 1 27.2
14.0	0 53 57.30	53 57.60	4 5 21.5	5 23.4	7.7422	8.548	1.98		14 1 23.4
15.0	0 54 5.27	54 5.57	4 6 12.5	6 14.4	7.7442	8.550	1.96		15 1 19.6
16.0	0 54 13.28	54 13.58	4 7 3.7	7 5.6	7.7462	8.552	1.93		16 1 15.8
17.0	0 54 21.32	54 21.63	4 7 55.1	7 57.0	7.7481	8.553	1.89		17 1 12.0
18.0	0 54 29.39	54 29.70	4 8 46.6	8 48.5	7.7500	8.554	1.85		18 1 8.2
19.0	0 54 37.51	54 37.82	4 9 38.2	9 40.1	7.7518	8.555	1.80		19 1 4.4
20.0	0 54 45.66	54 45.97	4 10 29.9	10 31.9	7.7536	8.556	1.73		20 1 0.6
21.0	0 54 53.84	54 54.16	4 11 21.7	11 23.7	7.7553	8.557	+1.65		21 0 56.8
22.0	0 55 2.04	55 2.36	4 12 13.6	12 15.6	7.7568	8.558			22 0 53.0
23.0	0 55 10.27	55 10.59	4 13 5.6	13 7.6	7.7581	8.559			23 0 49.2
24.0	0 55 18.53	55 18.85	4 13 57.7	13 59.7	7.7593	8.559			24 0 45.4
25.0	0 55 26.81	55 27.13	4 14 49.9	14 51.9	7.7603	8.560			25 0 41.6
26.0	0 55 35.11	55 35.43	4 15 42.2	15 44.2	7.7611	8.560			26 0 37.8
27.0	0 55 43.43	55 43.75	4 16 34.5	16 36.5	7.7619	8.560			27 0 34.0
28.0	0 55 51.76	55 52.09	4 17 26.8	17 28.8	7.7626	8.560			28 0 30.2
29.0	0 56 0.11	56 0.44	4 18 19.1	18 21.1	7.7633	8.561			29 0 26.4
30.0	0 56 8.47	56 8.80	4 19 11.5	19 13.5	7.7640	8.561			30 0 22.6
31.0	0 56 16.83	56 17.16	4 20 3.9	20 5.9	7.7645	8.561			31 0 18.8
Apr. 1.0	0 56 25.20	56 25.53	4 20 56.3	20 58.3	7.7649	8.561			1 0 15.0
2.0	0 56 33.58	56 33.91	4 21 48.8	21 50.8	7.7651	8.561			2 0 11.3
3.0	0 56 41.97	56 42.30	4 22 41.2	22 43.2	7.7653	8.560			3 0 7.5
4.0	0 56 50.36	56 50.69	4 23 33.5	23 35.5	7.7654	8.560			4 0 3.7
5.0	0 56 58.75	56 59.08	4 24 25.6	24 27.6	7.7655	8.560			4 23 59.9
6.0	0 57 7.14	57 7.47	4 25 17.7	25 19.7	7.7653	8.559			5 23 56.1
7.0	0 57 15.53	57 15.86	4 26 9.7	26 11.7	7.7650	8.558			6 23 52.3
8.0	0 57 23.91	57 24.24	4 27 1.6	27 3.6	7.7646	8.557			7 23 48.5
8.9	0 57 32.28	57 32.61	4 27 53.3	27 55.3	7.7642	8.556			8 23 44.7
9.9	0 57 40.65	57 40.98	4 28 45.0	28 47.0	7.7637	8.555			9 23 40.9
10.9	0 57 49.01	57 49.35	4 29 36.6	29 38.6	7.7632	8.554			10 23 37.1
11.9	0 57 57.35	57 57.69	4 30 28.0	30 30.1	7.7627	8.553			11 23 33.3
12.9	0 58 5.67	58 6.01	4 31 19.3	31 21.4	7.7620	8.552			12 23 29.5
13.9	0 58 13.98	58 14.32	4 32 10.5	32 12.6	7.7611	8.551			13 23 25.7
14.9	0 58 22.28	58 22.62	4 33 1.5	33 3.6	7.7601	8.549	-1.62		14 23 22.0
15.9	0 58 30.56	58 30.90	4 33 52.3	33 54.4	7.7591	8.547	1.68		15 23 18.2
16.9	0 58 38.83	58 39.17	4 34 42.9	34 45.0	7.7580	8.545	1.72		16 23 14.4
17.9	0 58 47.07	58 47.41	4 35 33.4	35 35.5	7.7568	8.543	1.76	-2.70	17 23 10.6
18.9	0 58 55.28	58 55.62	4 36 23.6	36 25.7	7.7555	8.541	1.79	2.75	18 23 6.8
19.9	0 59 3.47	59 3.81	4 37 13.6	37 15.6	7.7541	8.539	1.82	2.77	19 23 3.0
20.9	0 59 11.63	59 11.96	4 38 3.3	38 5.3	7.7527	8.537	1.85	2.79	20 22 59.2
21.9	0 59 19.77	59 20.10	4 38 52.8	38 54.8	7.7512	8.535	1.88	2.81	21 22 55.4
22.9	0 59 27.87	59 28.20	4 39 32.0	39 34.0	7.7496	8.533	1.91	2.83	22 22 51.6
23.9	0 59 35.94	59 36.27	4 40 20.9	40 22.9	7.7478	8.531	1.93	2.84	23 22 47.8
24.9	0 59 43.97	59 44.30	4 41 19.6	41 21.6	7.7458	8.529	1.95	2.85	24 22 44.0
25.9	0 59 51.98	59 52.31	4 42 8.1	42 10.1	7.7437	8.526	1.97	2.87	25 22 40.2
26.9	0 59 59.94	0 0.27	4 42 56.3	42 58.3	7.7415	8.523	1.99	2.88	26 22 36.4
27.9	1 0 7.86	0 8.19	4 43 44.0	43 46.0	7.7392	8.520	2.01	2.89	27 22 32.6
28.9	1 0 15.73	0 16.09	4 44 31.4	44 33.4	7.7369	8.517	2.03	2.90	28 22 28.8
29.9	1 0 23.57	0 23.89	4 45 18.6	45 20.5	7.7344	8.514	2.05	2.92	29 22 25.0
30.9	1 0 31.36	0 31.68	+ 4 46 5.4	46 7.3	+7.7318	+8.511	-2.07	-2.93	30 22 21.2

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.			Apparent Declination.			Log of a.		Log of b.		Mean Solar Time of Meridian Transit.
	At Sidereal Oh.	At Transit.		At Sidereal Oh.	At Transit.		In R.A.	In Dec.	In R.A.	In Dec.	
May	d	h m s	m s	+ ° ' "	46 ' "						d h m
1.9	1 0 39.10	0 39.42		4 46 51.8	46 53.7	+7.7291	+8.508	-2.08	-2.94		1 22 17.4
2.9	1 0 46.78	0 47.10		4 47 37.8	47 39.7	7.7264	8.504	2.09	2.95		2 22 13.6
3.9	1 0 54.42	0 54.74		4 48 23.6	48 25.5	7.7235	8.500	2.11	2.97		3 22 9.8
4.9	1 1 2.01	1 2.33		4 49 9.0	49 10.9	7.7205	8.496	2.12	2.98		4 22 6.0
5.9	1 1 9.54	1 9.86		4 49 53.9	49 55.8	7.7174	8.492	2.13	2.99		5 22 2.2
6.9	1 1 17.02	1 17.33		4 50 38.3	50 40.2	7.7141	8.488	2.14	3.00		6 21 58.4
7.9	1 1 24.45	1 24.76		4 51 22.5	51 24.3	7.7108	8.484	2.15	3.01		7 21 54.6
8.9	1 1 31.82	1 32.13		4 52 6.2	52 8.0	7.7074	8.480	2.16	3.02		8 21 50.7
9.9	1 1 39.13	1 39.44		4 52 49.5	52 51.3	7.7038	8.476	2.17	3.03		9 21 46.9
10.9	1 1 46.38	1 46.69		4 53 32.3	53 34.1	7.7001	8.472	2.18	3.04		10 21 43.1
11.9	1 1 53.58	1 53.89		4 54 14.7	54 16.5	7.6963	8.468	2.19	3.05		11 21 39.3
12.9	1 2 0.71	2 1.02		4 54 56.7	54 58.5	7.6924	8.464	2.20	3.06		12 21 35.5
13.9	1 2 7.77	2 8.08		4 55 38.2	55 40.0	7.6883	8.459	2.21	3.07		13 21 31.7
14.9	1 2 14.75	2 15.06		4 56 19.1	56 20.9	7.6841	8.454	2.22	3.07		14 21 27.9
15.8	1 2 21.67	2 21.97		4 56 59.7	57 1.4	7.6798	8.449	2.23	3.08		15 21 24.1
16.8	1 2 28.52	2 28.82		4 57 39.8	57 41.5	7.6753	8.444	2.24	3.09		16 21 20.2
17.8	1 2 35.30	2 35.60		4 58 19.4	58 21.1	7.6707	8.438	2.25	3.10		17 21 16.4
18.8	1 2 42.01	2 42.31		4 58 58.4	59 0.1	7.6658	8.432	2.26	3.10		18 21 12.6
19.8	1 2 48.65	2 48.95		4 59 37.1	59 38.8	7.6609	8.426	2.27	3.11		19 21 8.8
20.8	1 2 55.21	2 55.50		5 0 15.3	0 17.0	7.6558	8.420	2.28	3.12		20 21 4.9
21.8	1 3 1.69	3 1.98		5 0 52.9	0 54.6	7.6506	8.414	2.29	3.13		21 21 1.1
22.8	1 3 8.08	3 8.37		5 1 29.8	1 31.5	7.6451	8.408	2.29	3.13		22 20 57.3
23.8	1 3 14.41	3 14.69		5 2 6.3	2 7.9	7.6396	8.401	2.30	3.14		23 20 53.5
24.8	1 3 20.65	3 20.92		5 2 42.2	2 43.8	7.6339	8.394	2.31	3.14		24 20 49.6
25.8	1 3 26.80	3 27.07		5 3 17.6	3 19.2	7.6280	8.387	2.32	3.15		25 20 45.8
26.8	1 3 32.87	3 33.14		5 3 52.3	3 53.9	7.6220	8.380	2.32	3.15		26 20 42.0
27.8	1 3 38.86	3 39.13		5 4 26.6	4 28.2	7.6158	8.373	2.33	3.16		27 20 38.2
28.8	1 3 44.76	3 45.02		5 5 0.2	5 1.8	7.6094	8.365	2.33	3.16		28 20 34.3
29.8	1 3 50.57	3 50.83		5 5 33.2	5 34.7	7.6028	8.357	2.34	3.17		29 20 30.5
30.8	1 3 56.30	3 56.56		5 6 5.6	6 7.0	7.5959	8.349	2.34	3.17		30 20 26.7
31.8	1 4 1.94	4 2.19		5 6 37.4	6 38.9	7.5889	8.341	2.35	3.18		31 20 22.9
June 1.8	1 4 7.49	4 7.74		5 7 8.6	7 10.1	7.5817	8.333	2.35	3.18		1 20 19.0
2.8	1 4 13.94	4 13.18		5 7 39.2	7 40.6	7.5743	8.324	2.36	3.19		2 20 15.2
3.8	1 4 19.89	4 18.53		5 8 9.1	8 10.5	7.5667	8.315	2.36	3.19		3 20 11.3
4.8	1 4 23.55	4 23.79		5 8 38.5	8 39.8	7.5589	8.305	2.37	3.19		4 20 7.5
5.8	1 4 28.71	4 28.94		5 9 7.2	9 8.5	7.5508	8.295	2.37	3.20		5 20 3.6
6.8	1 4 33.77	4 34.00		5 9 35.3	9 36.6	7.5424	8.285	2.38	3.20		6 19 59.8
7.8	1 4 38.74	4 38.96		5 10 2.7	10 4.0	7.5338	8.275	2.38	3.20		7 19 55.9
8.8	1 4 43.61	4 43.83		5 10 29.5	10 30.7	7.5248	8.265	2.39	3.20		8 19 52.1
9.8	1 4 48.38	4 48.60		5 10 55.6	10 56.8	7.5155	8.254	2.39	3.21		9 19 48.2
10.8	1 4 53.04	4 53.25		5 11 21.1	11 22.3	7.5059	8.243	2.40	3.21		10 19 44.4
11.8	1 4 57.60	4 57.81		5 11 45.9	11 47.1	7.4960	8.232	2.40	3.21		11 19 40.5
12.8	1 5 2.07	5 2.28		5 12 10.1	12 11.2	7.4859	8.220	2.41	3.21		12 19 36.7
13.8	1 5 6.43	5 6.63		5 12 33.5	12 34.6	7.4755	8.208	2.41	3.22		13 19 32.8
14.8	1 5 10.69	5 10.89		5 12 56.4	12 57.4	7.4647	8.195	2.42	3.22		14 19 29.0
15.8	1 5 14.84	5 15.03		5 13 18.5	13 19.5	7.4536	8.181	2.42	3.22		15 19 25.1
16.8	1 5 18.88	5 19.07		5 13 40.0	13 41.0	7.4422	8.167	2.42	3.22		16 19 21.2
17.8	1 5 22.81	5 22.99		5 14 0.7	14 1.7	7.4305	8.153	2.43	3.23		17 19 17.3
18.8	1 5 26.63	5 26.81		5 14 20.8	14 21.7	7.4184	8.138	2.43	3.23		18 19 13.5
19.8	1 5 30.35	5 30.52		5 14 40.1	14 41.0	7.4059	8.122	2.43	3.23		19 19 9.6
20.8	1 5 33.96	5 34.13		5 14 58.6	14 59.5	7.3919	8.105	2.43	3.23		20 19 5.7
21.7	1 5 37.45	5 37.61		5 15 16.7	15 17.5	7.3779	8.088	2.44	3.24		21 19 1.8
22.7	1 5 40.83	5 40.99		5 15 34.0	15 34.8	7.3631	8.070	2.44	3.24		22 18 58.0
23.7	1 5 44.09	5 44.24		5 15 50.4	15 51.2	7.3478	8.051	2.44	3.24		23 18 54.1
24.7	1 5 47.24	5 47.39		5 16 6.2	16 6.9	7.3319	8.031	2.44	3.24		24 18 50.2
25.7	1 5 50.28	5 50.42		5 16 21.2	16 21.9	7.3155	8.010	2.45	3.25		25 18 46.3
26.7	1 5 53.20	5 53.34		5 16 35.6	16 36.2	7.2984	7.988	2.45	3.25		26 18 42.5
27.7	1 5 56.00	5 56.13		5 16 49.1	16 49.7	7.2807	7.964	2.45	3.25		27 18 38.6
28.7	1 5 58.69	5 58.82		5 17 2.0	17 2.6	7.2620	7.939	2.45	3.25		28 18 34.7
29.7	1 6 1.26	6 1.38		5 17 14.1	17 14.7	7.2425	7.913	2.45	3.26		29 18 30.8
30.7	1 6 3.71	6 3.83		5 17 25.5	17 26.0	7.2219	7.886	2.45	3.26		30 18 26.9
31.7	1 6 6.06	6 6.17		+ 5 17 36.1	17 36.6	+7.2001	+7.857	-2.45	-3.26		31 18 23.0

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.			Apparent Declination.			Log of a.		Log of b.		Mean Solar Time of Meridian Transit.
	At Sidereal Oh.	At Transit.	At Sidereal Oh.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.			
July	d	h m s	m s	+ 5 17 36.1	17 36.6	+7.2001	+7.857	-2.45	-3.26	d h m	
1.7	1 6 6.06	6 6.17	5 17 36.1	17 36.6	7.1771	7.827	2.45	3.26	2 18 19.1		
2.7	1 6 8.23	6 8.39	5 17 46.1	17 46.6	7.1529	7.793	2.46	3.26	3 18 15.2		
3.7	1 6 10.39	6 10.49	5 17 55.2	17 55.7	7.1272	7.755	2.46	3.26	4 18 11.3		
4.7	1 6 12.38	6 12.48	5 18 3.7	18 4.1	7.0999	7.712	2.46	3.26	5 18 7.4		
5.7	1 6 14.25	6 14.34	5 18 11.4	18 11.8	7.0708	7.663	2.46	3.26	6 18 3.5		
6.7	1 6 16.01	6 16.10	5 18 18.4	18 18.8	7.0389	7.616	2.46	3.26	7 17 59.6		
7.7	1 6 17.65	6 17.73	5 18 24.6	18 25.0	7.0045	7.558	2.46	3.26	8 17 55.7		
8.7	1 6 19.17	6 19.25	5 18 30.2	18 30.5	6.9671	7.490	2.46	3.26	9 17 51.8		
9.7	1 6 20.55	6 20.62	5 18 34.9	18 35.2	6.9262	7.410	2.46	3.26	10 17 47.9		
10.7	1 6 21.83	6 21.89	5 18 39.4	18 39.6	6.8811	7.311	2.47	3.26	11 17 44.0		
11.7	1 6 22.99	6 23.05	5 18 42.2	18 42.4	6.8307	7.184	2.47	3.26	12 17 40.1		
12.7	1 6 24.02	6 24.07	5 18 44.7	18 44.9	6.7736	7.003	2.47	3.26	13 17 36.2		
13.7	1 6 24.93	6 24.97	5 18 46.4	18 46.5	6.7079	+6.679	2.47	3.26	14 17 32.3		
14.7	1 6 25.72	6 25.76	5 18 47.4	18 47.5	6.6288	-5.717	2.47	3.26	15 17 28.3		
15.7	1 6 26.39	6 26.42	5 18 47.7	18 47.8	6.5319	6.758	2.47	3.25	16 17 24.4		
16.7	1 6 26.94	6 26.97	5 18 47.2	18 47.2	6.4069	7.039	2.47	3.25	17 17 20.5		
17.7	1 6 27.37	6 27.39	5 18 45.9	18 45.9	6.2308	7.208	2.47	3.25	18 17 16.6		
18.7	1 6 27.67	6 27.69	5 18 44.0	18 43.9	+5.9298	7.329	2.47	3.25	19 17 12.6		
19.7	1 6 27.85	6 27.86	5 18 41.2	18 41.1	-∞	7.423	2.47	3.25	20 17 8.7		
20.7	1 6 27.91	6 27.92	5 18 37.7	18 37.6	-5.9386	7.500	2.47	3.25	21 17 4.7		
21.7	1 6 27.85	6 27.85	5 18 33.4	18 33.2	6.2352	7.564	2.47	3.25	22 17 0.8		
22.7	1 6 27.66	6 27.65	5 18 28.4	18 28.2	6.4099	7.620	2.47	3.25	23 16 56.8		
23.7	1 6 27.35	6 27.34	5 18 22.8	18 22.5	6.5319	7.669	2.47	3.24	24 16 52.9		
24.7	1 6 26.92	6 26.90	5 18 16.3	18 16.0	6.6270	7.714	2.47	3.24	25 16 49.0		
25.7	1 6 26.37	6 26.35	5 18 9.2	18 8.8	6.7050	7.753	2.47	3.24	26 16 45.1		
26.7	1 6 25.69	6 25.66	5 18 1.3	18 0.9	6.7698	7.790	2.46	3.24	27 16 41.1		
27.7	1 6 24.89	6 24.85	5 17 52.8	17 52.4	6.8262	7.823	2.46	3.24	28 16 37.2		
28.6	1 6 23.98	6 23.94	5 17 43.6	17 43.1	6.8761	7.853	2.46	3.24	29 16 33.2		
29.6	1 6 22.96	6 22.91	5 17 33.5	17 33.0	6.9208	7.882	2.46	3.24	30 16 29.3		
30.6	1 6 21.82	6 21.77	5 17 22.7	17 22.2	6.9606	7.909	2.46	3.24	31 16 25.3		
Aug. 1.6	1 6 20.56	6 20.50	5 17 11.2	17 10.7	6.9970	7.935	2.45	3.23	1 16 21.3		
2.6	1 6 19.19	6 19.13	5 16 59.1	16 58.5	7.0306	7.959	2.45	3.23	2 16 17.4		
3.6	1 6 17.71	6 17.64	5 16 46.4	16 45.8	7.0618	7.981	2.45	3.23	3 16 13.4		
4.6	1 6 16.09	6 16.02	5 16 32.8	16 32.2	7.0909	8.002	2.45	3.23	4 16 9.4		
5.6	1 6 14.36	6 14.28	5 16 18.5	16 17.9	7.1181	8.023	2.44	3.22	5 16 5.4		
6.6	1 6 12.52	6 12.44	5 16 3.6	16 2.9	7.1432	8.043	2.44	3.22	6 16 1.5		
7.6	1 6 10.59	6 10.50	5 15 48.0	15 47.3	7.1670	8.061	2.44	3.22	7 15 57.5		
8.6	1 6 8.53	6 8.44	5 15 31.8	15 31.0	7.1895	8.077	2.44	3.22	8 15 53.5		
9.6	1 6 6.36	6 6.26	5 15 14.8	15 14.0	7.2109	8.093	2.43	3.21	9 15 49.5		
10.6	1 6 4.08	6 3.98	5 14 57.2	14 56.4	7.2308	8.108	2.43	3.21	10 15 45.6		
11.6	1 6 1.68	6 1.57	5 14 39.0	14 38.2	7.2499	8.122	2.43	3.21	11 15 41.6		
12.6	1 5 59.17	5 59.06	5 14 20.1	14 19.3	7.2682	8.136	2.42	3.20	12 15 37.6		
13.6	1 5 56.55	5 56.43	5 14 0.6	13 59.7	7.2853	8.150	2.42	3.20	13 15 33.6		
14.6	1 5 53.83	5 53.71	5 13 40.5	13 39.6	7.3018	8.163	2.41	3.19	14 15 29.7		
15.6	1 5 51.00	5 50.87	5 13 19.7	13 18.8	7.3174	8.176	2.41	3.19	15 15 25.7		
16.6	1 5 48.06	5 47.93	5 12 58.3	12 57.4	7.3323	8.189	2.40	3.18	16 15 21.7		
17.6	1 5 45.02	5 44.89	5 12 36.4	12 35.4	7.3468	8.201	2.40	3.18	17 15 17.7		
18.6	1 5 41.88	5 41.74	5 12 13.7	12 12.7	7.3605	8.213	2.39	3.17	18 15 13.7		
19.6	1 5 38.64	5 38.50	5 11 50.5	11 49.4	7.3737	8.224	2.39	3.17	19 15 9.7		
20.6	1 5 35.28	5 35.13	5 11 26.6	11 25.5	7.3863	8.234	2.38	3.16	20 15 5.7		
21.6	1 5 31.82	5 31.67	5 11 2.2	11 1.1	7.3983	8.244	2.38	3.15	21 15 1.7		
22.6	1 5 28.27	5 28.11	5 10 37.1	10 36.0	7.4099	8.254	2.37	3.14	22 14 57.8		
23.6	1 5 24.63	5 24.47	5 10 11.6	10 10.5	7.4206	8.263	2.37	3.14	23 14 53.8		
24.6	1 5 20.88	5 20.72	5 9 45.4	9 44.3	7.4310	8.272	2.36	3.13	24 14 49.8		
25.6	1 5 17.04	5 16.87	5 9 18.8	9 17.6	7.4411	8.281	2.35	3.12	25 14 45.8		
26.6	1 5 13.11	5 12.94	5 8 51.6	8 50.4	7.4507	8.289	2.34	3.11	26 14 41.8		
27.6	1 5 9.09	5 8.91	5 8 23.9	8 22.7	7.4602	8.297	2.34	3.10	27 14 37.8		
28.6	1 5 4.97	5 4.79	5 7 55.6	7 54.4	7.4694	8.304	2.33	3.09	28 14 33.8		
29.6	1 5 0.77	5 0.58	5 7 26.9	7 25.6	7.4782	8.311	2.32	3.08	29 14 29.8		
30.6	1 4 56.49	4 56.30	5 6 57.6	6 56.3	7.4866	8.318	2.31	3.07	30 14 25.8		
31.6	1 4 52.12	4 51.92	5 6 27.9	6 26.6	+7.4946	-8.325	-2.30	-3.06	31 14 21.8		
31.6	1 4 47.67	4 47.47	+ 5 5 57.7	5 56.4							

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.				Apparent Declination.				Log of <i>a</i> .		Log of <i>b</i> .		Mean Solar Time of Meridian Transit.			
	At Sidereal Oh.		At Transit.		At Sidereal Oh.		At Transit.		In R.A.	In Dec.	In R.A.	In Dec.				
	d	h	m	s	m	s	°	'	"					d	h	m
Sept. 1	6	1	4	43.14	4 42.94	+ 5	5	27.0	5 25.7	-7.5023	-8.332	-2.29	-3.05	1	14	17.8
2.5	1	4	38.53	4 38.32	5	4	55.8	4 54.5	7.5098	8.338	2.28	3.04	2	14	13.8	
3.5	1	4	33.84	4 33.63	5	4	24.3	4 22.9	7.5170	8.344	2.27	3.02	3	14	9.8	
4.5	1	4	29.05	4 28.84	5	3	52.2	3 50.8	7.5238	8.349	2.26	3.01	4	14	5.7	
5.5	1	4	24.19	4 23.97	5	3	19.8	3 18.4	7.5304	8.354	2.25	2.99	5	14	1.7	
6.5	1	4	19.26	4 19.04	5	2	46.9	2 45.5	7.5368	8.359	2.24	2.98	6	13	57.7	
7.5	1	4	14.27	4 14.05	5	2	13.7	2 12.2	7.5430	8.364	2.23	2.96	7	13	53.7	
8.5	1	4	9.20	4 8.98	5	1	40.1	1 38.6	7.5491	8.369	2.22	2.95	8	13	49.7	
9.5	1	4	4.06	4 3.83	5	1	6.2	1 4.7	7.5550	8.374	2.21	2.93	9	13	45.7	
10.5	1	3	58.86	3 58.63	5	0	31.9	0 30.4	7.5606	8.378	2.20	2.92	10	13	41.7	
11.5	1	3	53.60	3 53.37	4	59	57.2	59 55.6	7.5660	8.382	2.19	2.90	11	13	37.7	
12.5	1	3	48.26	3 48.03	4	59	22.2	59 20.6	7.5711	8.386	2.18	2.89	12	13	33.6	
13.5	1	3	42.86	3 42.62	4	58	46.9	58 45.3	7.5760	8.390	2.17	2.87	13	13	29.6	
14.5	1	3	37.41	3 37.17	4	58	11.4	58 9.8	7.5806	8.394	2.15	2.85	14	13	25.6	
15.5	1	3	31.90	3 31.66	4	57	35.5	57 33.9	7.5850	8.398	2.13	2.83	15	13	21.6	
16.5	1	3	26.33	3 26.09	4	56	59.3	56 57.7	7.5892	8.401	2.11	2.82	16	13	17.6	
17.5	1	3	20.71	3 20.47	4	56	22.9	56 21.3	7.5932	8.404	2.09	2.80	17	13	13.6	
18.5	1	3	15.04	3 14.79	4	55	46.3	55 44.7	7.5970	8.407	2.07	2.78	18	13	9.5	
19.5	1	3	9.34	3 9.09	4	55	9.4	55 7.8	7.6006	8.410	2.04	2.75	19	13	5.5	
20.5	1	3	3.57	3 3.32	4	54	32.2	54 30.6	7.6039	8.413	2.02	2.72	20	13	1.5	
21.5	1	2	57.76	2 57.51	4	53	54.9	53 53.3	7.6070	8.415	1.99	2.68	21	12	57.5	
22.5	1	2	51.92	2 51.67	4	53	17.4	53 15.8	7.6099	8.417	1.96	-2.63	22	12	53.5	
23.5	1	2	46.05	2 45.79	4	52	39.6	52 38.0	7.6125	8.419	1.93		23	12	49.4	
24.5	1	2	40.13	2 39.87	4	52	1.7	52 0.1	7.6151	8.421	1.90		24	12	45.4	
25.5	1	2	34.18	2 33.92	4	51	23.7	51 22.0	7.6175	8.423	1.87		25	12	41.3	
26.5	1	2	28.20	2 27.94	4	50	45.5	50 43.8	7.6197	8.424	1.84		26	12	37.3	
27.5	1	2	22.19	2 21.93	4	50	7.1	50 5.4	7.6218	8.425	1.80		27	12	33.3	
28.5	1	2	16.15	2 15.89	4	49	28.7	49 27.0	7.6236	8.426	1.76		28	12	29.2	
29.5	1	2	10.09	2 9.83	4	48	50.2	48 48.5	7.6252	8.427	1.72		29	12	25.2	
30.5	1	2	4.01	2 3.75	4	48	11.6	48 9.9	7.6266	8.428	1.68		30	12	21.2	
Oct. 1	5	1	1	57.90	1 57.64	4	47	32.8	47 31.1	7.6279	8.429	-1.63		1	12	17.1
2.5	1	1	51.77	1 51.51	4	46	54.1	46 52.4	7.6292	8.430			2	12	13.1	
3.5	1	1	45.63	1 45.37	4	46	15.3	46 13.6	7.6303	8.430			3	12	9.0	
4.5	1	1	39.48	1 39.22	4	45	36.5	45 34.8	7.6312	8.430			4	12	5.0	
5.5	1	1	33.33	1 33.07	4	44	57.7	44 56.0	7.6319	8.430			5	12	1.0	
6.5	1	1	27.16	1 26.90	4	44	18.9	44 17.2	7.6325	8.430			6	11	56.9	
7.5	1	1	20.98	1 20.72	4	43	40.2	43 38.5	7.6329	8.430			7	11	52.9	
8.5	1	1	14.80	1 14.54	4	43	1.5	42 59.9	7.6331	8.430			8	11	48.9	
9.4	1	1	8.61	1 8.35	4	42	22.8	42 21.2	7.6332	8.429			9	11	44.8	
10.4	1	1	2.42	1 2.16	4	41	44.1	41 42.5	7.6331	8.428			10	11	40.8	
11.4	1	0	56.24	0 55.98	4	41	5.5	41 3.9	7.6328	8.427			11	11	36.7	
12.4	1	0	50.07	0 49.81	4	40	27.2	40 25.6	7.6323	8.426			12	11	32.7	
13.4	1	0	43.90	0 43.64	4	39	49.0	39 47.4	7.6317	8.425			13	11	28.7	
14.4	1	0	37.74	0 37.48	4	39	10.8	39 9.2	7.6309	8.424			14	11	24.6	
15.4	1	0	31.60	0 31.34	4	38	32.7	38 31.1	7.6299	8.422	+1.65		15	11	20.6	
16.4	1	0	25.47	0 25.21	4	37	54.8	37 53.2	7.6287	8.420	1.71	+2.67	16	11	16.6	
17.4	1	0	19.36	0 19.10	4	37	17.1	37 15.5	7.6274	8.418	-1.76	2.71	17	11	12.5	
18.4	1	0	13.26	0 13.00	4	36	39.6	36 38.0	7.6257	8.416	1.80	2.74	18	11	8.5	
19.4	1	0	7.19	0 6.94	4	36	2.2	36 0.6	7.6238	8.413	1.84	2.76	19	11	4.5	
20.4	1	0	1.15	0 0.90	4	35	25.1	35 23.5	7.6217	8.410	1.87	2.78	20	11	0.4	
21.4	0	59	55.15	59 54.90	4	34	48.2	34 46.7	7.6195	8.407	1.90	2.80	21	10	56.4	
22.4	0	59	49.16	59 48.91	4	34	11.7	34 10.2	7.6170	8.404	1.93	2.82	22	10	52.4	
23.4	0	59	43.22	59 42.97	4	33	35.4	33 33.9	7.6143	8.401	1.96	2.84	23	10	48.3	
24.4	0	59	37.32	59 37.08	4	32	59.4	32 57.9	7.6114	8.397	1.98	2.86	24	10	44.3	
25.4	0	59	31.46	59 31.22	4	32	23.8	32 22.3	7.6083	8.393	2.00	2.88	25	10	40.3	
26.4	0	59	25.63	59 25.39	4	31	48.4	31 46.9	7.6051	8.389	2.03	2.90	26	10	36.2	
27.4	0	59	19.85	59 19.62	4	31	13.3	31 11.8	7.6017	8.385	2.05	2.92	27	10	32.2	
28.4	0	59	14.12	59 13.89	4	30	38.7	30 37.2	7.5981	8.381	2.07	2.94	28	10	28.2	
29.4	0	59	8.43	59 8.20	4	30	4.3	30 2.9	7.5943	8.376	2.09	2.95	29	10	24.1	
30.4	0	59	2.78	59 2.55	4	29	30.3	29 28.9	7.5904	8.371	2.11	2.97	30	10	20.1	
31.4	0	58	57.19	58 56.97	4	28	56.6	28 55.3	7.5863	8.366	2.13	2.99	31	10	16.1	
32.4	0	58	51.66	58 51.44	+ 4	28	23.4	28 22.1	-7.5820	-8.361	+2.14	+3.00	32	10	12.1	

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of α .		Log of δ .		Mean Solar Time of Meridian Transit.
	At Sidereal Oh.	At Transit.	At Sidereal Oh.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
d	h m s	m s	° ' "	° ' "					d h m
Nov. 1.4	0 58 51.66	58 51.44	+ 4 28 23.4	28 22.1	-7.5820	-8.361	+2.14	+3.00	1 10 12.1
2.4	0 58 46.18	58 45.96	4 27 50.6	27 49.3	7.5775	8.356	2.15	3.01	2 10 8.0
3.4	0 58 40.75	58 40.53	4 27 18.2	27 16.9	7.5739	8.350	2.17	3.02	3 10 4.0
4.4	0 58 35.39	58 35.18	4 26 46.2	26 44.9	7.5691	8.344	2.18	3.03	4 10 0.0
5.4	0 58 30.09	58 29.88	4 26 14.7	26 13.5	7.5630	8.338	2.20	3.04	5 9 56.0
6.4	0 58 24.87	58 24.66	4 25 43.6	25 42.4	7.5577	8.332	2.21	3.05	6 9 52.0
7.4	0 58 19.68	58 19.47	4 25 12.9	25 11.7	7.5523	8.325	2.23	3.06	7 9 47.9
8.4	0 58 14.57	58 14.37	4 24 42.6	24 41.4	7.5466	8.318	2.24	3.07	8 9 43.9
9.4	0 58 9.54	58 9.34	4 24 13.0	24 11.8	7.5406	8.311	2.25	3.08	9 9 39.9
10.4	0 58 4.58	58 4.38	4 23 44.0	23 42.8	7.5343	8.303	2.26	3.09	10 9 35.9
11.4	0 57 59.68	57 59.48	4 23 15.4	23 14.2	7.5278	8.295	2.27	3.10	11 9 31.9
12.4	0 57 54.86	57 54.67	4 22 47.2	22 46.1	7.5210	8.287	2.28	3.11	12 9 27.9
13.4	0 57 50.13	57 49.94	4 22 19.7	22 18.6	7.5138	8.278	2.29	3.12	13 9 23.9
14.4	0 57 45.49	57 45.31	4 21 52.7	21 51.6	7.5063	8.269	2.30	3.13	14 9 19.9
15.3	0 57 40.92	57 40.74	4 21 26.3	21 25.2	7.4975	8.260	2.31	3.14	15 9 15.9
16.3	0 57 36.44	57 36.26	4 21 0.4	20 59.4	7.4886	8.250	2.32	3.15	16 9 11.9
17.3	0 57 32.05	57 31.88	4 20 35.2	20 34.2	7.4793	8.240	2.33	3.16	17 9 7.9
18.3	0 57 27.75	57 27.58	4 20 10.5	20 9.5	7.4699	8.230	2.34	3.17	18 9 3.9
19.3	0 57 23.55	57 23.38	4 19 46.5	19 45.5	7.4600	8.218	2.35	3.18	19 8 59.9
20.3	0 57 19.44	57 19.28	4 19 23.1	19 22.2	7.4499	8.206	2.36	3.19	20 8 55.9
21.3	0 57 15.43	57 15.27	4 19 0.4	18 59.5	7.4397	8.193	2.37	3.20	21 8 51.9
22.3	0 57 11.52	57 11.37	4 18 38.3	18 37.5	7.4288	8.179	2.37	3.21	22 8 47.9
23.3	0 57 7.70	57 7.55	4 18 17.0	18 16.2	7.4177	8.166	2.38	3.22	23 8 43.9
24.3	0 57 3.98	57 3.83	4 17 56.4	17 55.6	7.4064	8.152	2.38	3.22	24 8 39.9
25.3	0 57 0.36	57 0.22	4 17 36.4	17 35.7	7.3943	8.138	2.39	3.23	25 8 35.9
26.3	0 56 56.85	56 56.71	4 17 17.1	17 16.4	7.3821	8.122	2.39	3.23	26 8 31.9
27.3	0 56 53.43	56 53.29	4 16 58.4	16 57.7	7.3690	8.105	2.40	3.24	27 8 27.9
28.3	0 56 50.12	56 49.99	4 16 40.5	16 39.8	7.3551	8.088	2.40	3.24	28 8 23.9
29.3	0 56 46.91	56 46.78	4 16 23.3	16 22.7	7.3410	8.070	2.41	3.25	29 8 19.9
30.3	0 56 43.81	56 43.69	4 16 6.8	16 6.2	7.3260	8.051	2.41	3.25	30 8 16.0
Dec. 1.3	0 56 40.81	56 40.69	4 15 51.1	15 50.5	7.3101	8.031	2.42	3.25	1 8 12.0
2.3	0 56 37.92	56 37.81	4 15 36.1	15 35.5	7.2935	8.010	2.42	3.26	2 8 8.0
3.3	0 56 35.14	56 35.03	4 15 21.8	15 21.3	7.2759	7.988	2.43	3.26	3 8 4.0
4.3	0 56 32.50	56 32.40	4 15 8.1	15 7.6	7.2574	7.965	2.43	3.26	4 8 0.0
5.3	0 56 29.94	56 29.84	4 14 55.3	14 54.8	7.2379	7.942	2.44	3.26	5 7 56.0
6.3	0 56 27.50	56 27.41	4 14 43.2	14 42.7	7.2173	7.918	2.44	3.27	6 7 52.0
7.3	0 56 25.18	56 25.09	4 14 31.8	14 31.3	7.1958	7.892	2.45	3.27	7 7 48.1
8.3	0 56 22.98	56 22.90	4 14 21.0	14 20.6	7.1726	7.864	2.45	3.27	8 7 44.1
9.3	0 56 20.90	56 20.82	4 14 10.9	14 10.5	7.1481	7.832	2.46	3.27	9 7 40.1
10.3	0 56 18.94	56 18.87	4 14 1.6	14 1.2	7.1216	7.796	2.46	3.28	10 7 36.2
11.3	0 56 17.10	56 17.03	4 13 53.0	13 52.7	7.0933	7.757	2.47	3.28	11 7 32.2
12.3	0 56 15.38	56 15.32	4 13 45.2	13 44.9	7.0624	7.712	2.47	3.28	12 7 28.3
13.3	0 56 13.78	56 13.72	4 13 38.2	13 37.9	7.0292	7.663	2.47	3.28	13 7 24.3
14.3	0 56 12.30	56 12.25	4 13 31.9	13 31.7	6.9932	7.607	2.48	3.29	14 7 20.4
15.3	0 56 10.95	56 10.90	4 13 26.6	13 26.4	6.9539	7.522	2.48	3.29	15 7 16.4
16.3	0 56 9.73	56 9.68	4 13 22.1	13 21.9	6.9098	7.465	2.48	3.29	16 7 12.5
17.3	0 56 8.63	56 8.59	4 13 18.4	13 18.3	6.8608	7.371	2.48	3.29	17 7 8.5
18.3	0 56 7.66	56 7.62	4 13 15.5	13 15.4	6.8064	7.252	2.48	3.30	18 7 4.6
19.3	0 56 6.81	56 6.78	4 13 13.5	13 13.4	6.7407	7.098	2.48	3.30	19 7 0.6
20.3	0 56 6.09	56 6.06	4 13 12.3	13 12.3	6.6645	6.819	2.48	3.30	20 6 56.7
21.2	0 56 5.49	56 5.46	4 13 12.0	13 12.0	6.5720	-5.939	2.48	3.30	21 6 52.8
22.2	0 56 5.02	56 5.00	4 13 12.5	13 12.5	6.4544	+6.687	2.49	3.30	22 6 48.9
23.2	0 56 4.68	56 4.66	4 13 13.8	13 13.9	6.2988	7.091	2.49	3.30	23 6 44.9
24.2	0 56 4.46	56 4.45	4 13 15.8	13 15.9	6.0178	7.208	2.49	3.30	24 6 41.0
25.2	0 56 4.38	56 4.37	4 13 18.6	13 18.7	-5.1427	7.338	2.49	3.30	25 6 37.0
26.2	0 56 4.43	56 4.43	4 13 22.3	13 22.4	+5.8831	7.438	2.49	3.30	26 6 33.1
27.2	0 56 4.60	56 4.60	4 13 26.8	13 27.0	6.2219	7.519	2.49	3.29	27 6 29.1
28.2	0 56 4.90	56 4.91	4 13 32.1	13 32.3	6.4069	7.588	2.49	3.29	28 6 25.2
29.2	0 56 5.34	56 5.35	4 13 38.2	13 38.4	6.5406	7.647	2.49	3.29	29 6 21.3
30.2	0 56 5.90	56 5.92	4 13 45.0	13 45.3	6.6303	7.699	2.49	3.29	30 6 17.4
31.2	0 56 6.59	56 6.61	4 13 52.6	13 52.9	6.7196	7.745	2.48	3.29	31 6 13.5
32.2	0 56 7.40	56 7.42	+ 4 14 1.1	14 1.4	+6.7874	+7.787	+2.48	+3.29	32 6 9.6

HORIZONTAL PARALLAXES AND SEMIDIAMETERS.

Mean Noon.	HORIZONTAL PARALLAXES.			SEMIDIAMETERS.			SID. TIME OF SEMIDIAMETER PASSING THE MERIDIAN.		
	♂	♀	♂	♂	♀	♂	♂	♀	♂
Jan. 1	6.99	6.70	3.55	2.45	5.68	2.10	0.18	0.40	0.15
6	6.14	5.78	3.56	2.39	5.76	2.10	0.17	0.41	0.15
11	6.05	5.86	3.56	2.35	5.84	2.10	0.17	0.41	0.15
16	6.01	5.95	3.59	2.34	5.93	2.11	0.17	0.41	0.15
21	6.04	6.05	3.60	2.35	6.03	2.12	0.17	0.41	0.15
26	6.14	6.15	3.60	2.39	6.13	2.12	0.17	0.42	0.15
31	6.31	6.26	3.61	2.46	6.24	2.13	0.17	0.42	0.15
Feb. 5	6.62	6.39	3.62	2.58	6.36	2.14	0.18	0.43	0.15
10	7.10	6.52	3.63	2.76	6.49	2.14	0.19	0.43	0.15
15	7.85	6.66	3.64	3.05	6.63	2.15	0.21	0.44	0.15
20	8.96	6.81	3.66	3.49	6.78	2.15	0.23	0.45	0.15
25	10.46	6.98	3.67	4.07	6.95	2.16	0.27	0.47	0.15
Mar. 1	12.15	7.16	3.68	4.73	7.13	2.17	0.32	0.48	0.15
6	13.52	7.35	3.69	5.26	7.32	2.18	0.35	0.50	0.15
11	13.98	7.56	3.71	5.44	7.53	2.19	0.36	0.51	0.15
16	13.54	7.79	3.72	5.27	7.76	2.20	0.35	0.54	0.15
21	12.59	8.03	3.74	4.90	8.00	2.20	0.33	0.56	0.15
26	11.53	8.30	3.76	4.49	8.27	2.21	0.30	0.58	0.15
31	10.54	8.60	3.77	4.10	8.57	2.22	0.28	0.61	0.15
Apr. 5	9.68	8.93	3.78	3.77	8.90	2.23	0.25	0.64	0.15
10	8.94	9.29	3.80	3.48	9.26	2.24	0.23	0.68	0.15
15	8.31	9.69	3.81	3.23	9.65	2.25	0.22	0.71	0.15
20	7.77	10.14	3.83	3.03	10.10	2.26	0.20	0.75	0.15
25	7.32	10.63	3.84	2.85	10.59	2.27	0.19	0.79	0.15
30	6.95	11.18	3.86	2.71	11.13	2.27	0.18	0.83	0.15
May 5	6.68	11.80	3.88	2.60	11.74	2.28	0.18	0.88	0.15
10	6.51	12.48	3.90	2.54	12.44	2.30	0.18	0.93	0.15
15	6.49	13.25	3.92	2.53	13.20	2.31	0.18	0.99	0.15
20	6.65	14.12	3.94	2.59	14.08	2.32	0.19	1.05	0.15
25	6.99	15.11	3.96	2.72	15.06	2.33	0.20	1.11	0.16
30	7.50	16.23	3.98	2.92	16.17	2.35	0.22	1.19	0.16
June 4	8.17	17.50	4.00	3.18	17.43	2.36	0.23	1.28	0.16
9	8.98	18.91	4.02	3.50	18.84	2.37	0.26	1.36	0.16
14	9.93	20.50	4.05	3.87	20.42	2.38	0.28	1.46	0.16
19	11.00	22.22	4.08	4.28	22.14	2.40	0.31	1.57	0.16
24	12.16	24.05	4.10	4.72	23.96	2.42	0.34	1.69	0.17
29	13.34	25.88	4.13	5.19	25.79	2.43	0.37	1.81	0.17
July 4	14.35	27.55	4.17	5.59	27.44	2.45	0.39	1.92	0.17
9	14.94	28.86	4.21	5.81	28.73	2.47	0.41	2.00	0.17
14	14.84	29.49	4.24	5.77	29.39	2.50	0.40	2.04	0.18
19	13.96	29.43	4.28	5.44	29.32	2.52	0.38	2.02	0.18
24	12.59	28.61	4.32	4.90	28.51	2.55	0.34	1.96	0.18
29	11.03	27.26	4.36	4.29	27.16	2.57	0.30	1.86	0.18
Aug. 3	9.57	25.58	4.41	3.73	25.49	2.60	0.26	1.74	0.19
8	8.36	23.79	4.46	3.26	23.70	2.63	0.23	1.64	0.19
13	7.45	22.01	4.52	2.90	21.93	2.66	0.21	1.52	0.19
18	6.84	20.36	4.58	2.66	20.28	2.69	0.19	1.41	0.19
23	6.47	18.85	4.64	2.52	18.79	2.73	0.17	1.29	0.20
28	6.28	17.48	4.71	2.44	17.44	2.78	0.17	1.20	0.20
Sept. 2	6.21	16.29	4.78	2.42	16.34	2.83	0.16	1.12	0.20
7	6.23	15.21	4.87	2.43	15.16	2.88	0.16	1.06	0.20
12	6.31	14.27	4.95	2.46	14.22	2.92	0.16	0.99	0.21
17	6.46	13.42	5.05	2.52	13.37	2.97	0.17	0.92	0.21
22	6.67	12.67	5.15	2.60	12.63	3.03	0.18	0.86	0.21
27	6.95	12.00	5.26	2.71	11.95	3.10	0.18	0.82	0.22
Oct. 2	7.31	11.39	5.37	2.85	11.34	3.16	0.20	0.77	0.22
7	7.81	10.84	5.50	3.04	10.80	3.23	0.21	0.73	0.23
12	8.42	10.35	5.63	3.29	10.31	3.31	0.23	0.70	0.23
17	9.24	9.91	5.78	3.60	9.87	3.39	0.26	0.66	0.24
22	10.29	9.50	5.93	4.01	9.46	3.49	0.29	0.63	0.24

HORIZONTAL PARALLAXES AND SEMIDIAMETERS.

Mean Noon.	HORIZONTAL PARALLAXES.			SEMIDIAMETERS.			SID. TIME OF SEMIDIAMETER PASSING THE MERIDIAN.		
	♂	♀	♂	♂	♀	♂	♂	♀	♂
Oct. 27	11.53	9.14	6.10	4.49	9.11	3.59	0.32	0.60	0.25
Nov. 1	12.56	8.81	6.28	4.89	8.81	3.70	0.34	0.59	0.26
6	12.58	8.51	6.47	4.90	8.47	3.81	0.34	0.56	0.27
11	11.40	8.21	6.68	4.49	8.19	3.94	0.30	0.54	0.27
16	9.86	7.96	6.92	3.84	7.93	4.08	0.26	0.53	0.28
21	8.59	7.72	7.17	3.34	7.69	4.22	0.23	0.51	0.29
26	7.69	7.50	7.44	2.99	7.47	4.37	0.21	0.50	0.30
Dec. 1	7.07	7.29	7.72	2.75	7.27	4.54	0.19	0.49	0.31
6	6.64	7.10	8.03	2.59	7.08	4.73	0.18	0.48	0.32
11	6.34	6.93	8.36	2.49	6.90	4.92	0.18	0.47	0.33
16	6.14	6.77	8.71	2.39	6.74	5.12	0.17	0.47	0.34
21	6.02	6.62	9.09	2.34	6.59	5.35	0.17	0.46	0.36
26	5.96	6.48	9.49	2.32	6.45	5.59	0.17	0.45	0.38
31	5.96	6.34	10.00	2.32	6.32	5.83	0.17	0.45	0.39
Mean Noon.	♂	♀	♂	♂	♀	♂	♂	♀	♂
Jan. 1	1.56	0.80	0.48	17.52	7.30	1.88	1.23	0.51	0.12
11	1.53	0.81	0.48	17.14	7.39	1.88	1.20	0.52	0.12
21	1.50	0.82	0.48	16.82	7.48	1.87	1.18	0.53	0.12
31	1.48	0.83	0.48	16.57	7.58	1.87	1.16	0.53	0.11
Feb. 10	1.46	0.85	0.47	16.38	7.70	1.86	1.14	0.54	0.11
20	1.45	0.86	0.47	16.24	7.83	1.85	1.13	0.55	0.11
Mar. 1	1.44	0.87	0.47	16.15	7.96	1.83	1.12	0.56	0.11
11	1.44	0.89	0.46	16.12	8.09	1.82	1.12	0.57	0.11
21	1.44	0.90	0.46	16.15	8.22	1.80	1.12	0.58	0.11
31	1.45	0.91	0.46	16.24	8.35	1.79	1.12	0.59	0.11
Apr. 10	1.46	0.93	0.45	16.38	8.46	1.77	1.13	0.60	0.11
20	1.48	0.94	0.45	16.58	8.56	1.76	1.15	0.60	0.11
30	1.50	0.95	0.44	16.83	8.64	1.74	1.17	0.61	0.11
May 10	1.53	0.95	0.44	17.14	8.69	1.72	1.19	0.61	0.11
20	1.56	0.96	0.44	17.51	8.71	1.71	1.21	0.61	0.10
30	1.60	0.96	0.43	17.93	8.71	1.70	1.24	0.61	0.10
June 9	1.64	0.95	0.43	18.41	8.68	1.70	1.27	0.61	0.10
19	1.69	0.94	0.43	18.94	8.62	1.69	1.31	0.61	0.10
29	1.74	0.94	0.43	19.52	8.53	1.69	1.35	0.60	0.10
July 9	1.80	0.93	0.43	20.15	8.43	1.69	1.39	0.59	0.10
19	1.86	0.91	0.44	20.81	8.31	1.69	1.44	0.59	0.10
29	1.92	0.90	0.44	21.49	8.18	1.69	1.49	0.58	0.10
Aug. 8	1.98	0.88	0.44	22.16	8.05	1.70	1.54	0.57	0.10
18	2.03	0.87	0.45	22.80	7.92	1.71	1.58	0.56	0.10
28	2.08	0.85	0.45	23.37	7.79	1.72	1.62	0.55	0.11
Sept. 7	2.12	0.84	0.45	23.84	7.66	1.74	1.65	0.54	0.11
17	2.15	0.83	0.46	24.16	7.54	1.76	1.67	0.53	0.11
27	2.17	0.81	0.46	24.32	7.43	1.77	1.68	0.53	0.11
Oct. 7	2.17	0.80	0.47	24.29	7.34	1.78	1.68	0.52	0.11
17	2.15	0.80	0.47	24.08	7.27	1.80	1.67	0.52	0.11
27	2.12	0.79	0.47	23.71	7.20	1.81	1.64	0.51	0.11
Nov. 6	2.08	0.79	0.48	23.20	7.15	1.83	1.60	0.51	0.11
16	2.03	0.78	0.48	22.59	7.11	1.85	1.56	0.50	0.11
26	1.97	0.78	0.48	21.92	7.10	1.86	1.52	0.50	0.11
Dec. 6	1.90	0.78	0.48	21.21	7.10	1.87	1.47	0.50	0.12
16	1.83	0.78	0.48	20.51	7.12	1.88	1.42	0.50	0.12
26	1.77	0.79	0.48	19.85	7.17	1.88	1.37	0.51	0.12
36	1.72	0.79	0.48	19.22	7.24	1.88	1.33	0.51	0.12

NOTE. — For Neptune the Horizontal Parallax = 0".28 (between Jan. 20 and June 21)

" " " " = 0".29 (before Jan. 20, between June 21 and Aug. 26, and after Nov. 19.)

" " " " = 0".30 (between Aug. 26 and Nov. 19.)

SUN'S COÖRDINATES, 1868. 391

Date, 1868.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
	X.	X'.	Y.	Y'.	Z.	Z'.	$\lambda = \odot$'s True Longitude.	λ'	$\delta = \odot$'s Latitude.	Log. Rad. Vect. = ρ .
Jan. 1.0	+1815525	5814	—8864973	4757	—3846136	6490	290 38 25.9	32.1	—0.45	926506
1.5	1901417	1701	8849776	9558	3839545	9897	281 9 1.0	7.1	0.51	926593
2.0	1987155	7434	8833891	3672	3832656	3007	281 39 35.9	41.9	0.57	926585
2.5	2072734	3008	8817319	7099	3825469	5819	282 10 10.8	16.7	0.62	926583
3.0	2158148	8418	8800063	9842	3817985	8333	282 40 45.5	51.3	0.66	926587
3.5	+2243390	3655	—8782124	1902	—3810204	0651	283 11 20.2	25.9	—0.69	926597
4.0	2328455	8716	8763504	3281	3802128	2473	283 41 54.8	60.4	0.72	926613
4.5	2413336	3592	8744204	3980	3793756	4100	284 12 29.3	34.8	0.74	926636
5.0	2498026	8278	8724227	4003	3785090	5432	284 43 3.7	9.2	0.76	926665
5.5	2582517	2764	8703574	3349	3776130	6471	285 13 38.0	43.4	0.77	926700
6.0	+2666803	7046	—8682247	2022	—3766877	7216	285 44 12.1	17.5	—0.78	926741
6.5	2750880	1118	8660248	0022	3757332	7670	286 14 46.2	51.5	0.77	926789
7.0	2834743	4977	8637579	7353	3747496	7832	286 45 20.2	25.4	0.76	926845
7.5	2918386	8615	8614242	4016	3737370	7705	287 15 54.2	59.3	0.74	926907
8.0	3001802	2027	8590238	0012	3726954	7287	287 46 28.0	33.0	0.71	926977
8.5	+3084986	5206	—8565569	5342	—3716250	6582	288 17 1.7	6.6	—0.68	927054
9.0	3167931	8147	8540237	0010	3705258	5588	288 47 35.4	40.2	0.64	927138
9.5	3250630	0841	8514244	4017	3693979	4308	289 18 9.0	13.7	0.60	927229
10.0	3333077	3284	8487592	7365	3682414	2741	289 48 42.5	47.2	0.55	927328
10.5	3415366	5469	8460282	0055	3670563	0889	290 19 16.0	20.6	0.50	927434
11.0	+3497192	7391	—8432317	2091	—3658428	8752	290 49 49.4	54.0	—0.44	927546
11.5	3578849	9043	8403700	3474	3646010	6333	291 20 22.7	27.2	0.38	927665
12.0	3660231	0421	8374432	4236	3633310	3631	291 50 56.0	60.4	0.31	927791
12.5	3741332	1518	8344514	4288	3620328	0647	292 21 29.2	33.5	0.25	927924
13.0	3822146	2328	8313949	3724	3607065	7382	292 52 2.3	6.5	0.18	928063
13.5	+3902666	2844	—8282740	2515	—3593521	3837	293 22 35.4	39.5	—0.11	928209
14.0	3982886	3060	8250888	0664	3579698	0012	293 53 8.4	12.4	—0.04	928361
14.5	4062801	2971	8218394	8170	3565597	5910	294 23 41.4	45.3	+0.02	928519
15.0	4142405	2571	8185261	5038	3551220	1531	294 54 14.3	18.2	0.08	928684
15.5	4221690	1852	8151491	1269	3536567	6877	295 24 47.1	50.9	0.14	928854
16.0	+4300650	0808	—8117088	6867	—3521638	1946	295 55 19.9	23.7	+0.19	929031
16.5	4379279	9433	8082053	1833	3506435	6741	296 25 52.6	56.3	0.24	929214
17.0	4457574	7725	8046390	6171	3490960	1264	296 56 25.3	28.9	0.28	929402
17.5	4535528	5675	8010100	9882	3475213	5516	297 26 57.9	61.4	0.32	929596
18.0	4613132	3275	7973185	2968	3459185	2496	297 57 30.4	33.8	0.35	929795
18.5	+4690382	6521	—7935647	5431	—3442908	3207	298 28 2.9	6.2	+0.37	929999
19.0	4767271	7407	7897490	7276	3426352	6649	298 58 35.2	38.5	0.39	930207
19.5	4843791	3922	7858716	8503	3409529	9824	299 29 7.5	10.7	0.40	930420
20.0	4919935	0064	7819329	9118	3392441	2734	299 59 39.6	42.8	0.40	930637
20.5	4995698	5823	7779331	9121	3375089	5380	300 30 11.6	14.7	0.39	930858
21.0	+5071073	1195	—7738725	8517	—3357473	7762	301 0 43.4	46.5	+0.38	931084
21.5	5146055	6173	7697515	7308	3339596	9884	301 31 15.1	18.1	0.36	931314
22.0	5220637	0752	7655704	5499	3321458	1744	302 1 46.6	49.5	0.33	931548
22.5	5294815	4926	7613295	3092	3303061	3345	302 32 18.0	20.8	0.29	931786
23.0	5368582	8690	7570291	0090	3284407	4689	303 2 49.2	51.9	0.25	932028
23.5	+5441932	2036	—7526697	6497	—3265497	5777	303 33 20.3	22.9	+0.20	932274
24.0	5514858	4959	7482516	2318	3246333	6610	304 3 51.1	53.7	0.15	932523
24.5	5587355	7453	7437752	7556	3226915	7191	304 34 21.7	24.2	0.09	932776
25.0	5659416	9511	7392409	2215	3207246	7520	305 4 52.1	54.6	+0.03	933033
25.5	5731036	1128	7346490	6298	3187328	7600	305 35 22.3	24.7	—0.03	933293
26.0	+5802206	2297	—7300000	9810	—3167162	7432	306 5 52.2	54.6	—0.10	933557
26.5	5872926	3012	7252943	2755	3146750	7019	306 36 21.8	24.1	0.17	933824
27.0	5943185	3268	7205323	5137	3126093	6360	307 6 51.2	53.4	0.23	934095
27.5	6012979	3059	7157145	6961	3105193	5458	307 37 20.3	22.4	0.30	934370
28.0	6082303	2380	7108412	8230	3084053	4316	308 7 49.1	51.1	0.36	934649
28.5	+6151152	1226	—7050128	8948	—3062678	2936	308 38 17.6	19.5	—0.42	934932
29.0	6219522	9503	7009299	9122	3041060	1319	309 8 45.7	47.6	0.47	935219
29.5	6287407	7475	6958928	8753	3019209	9467	309 39 13.6	15.4	0.52	935511
30.0	6354802	4867	6908021	7848	2997125	7381	310 9 41.2	43.0	0.57	935806
30.5	6421702	1764	6856581	6410	2974810	5064	310 40 8.4	10.1	0.61	936106
31.0	6488103	8163	6804613	4445	2952265	2517	311 10 35.2	36.9	—0.65	936410

NOTE. — The accented letters correspond to the mean equinox and equator of January 0.0.

392 SUN'S COÖRDINATES, 1868.

Date, 1868.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.				
	X.	X'.	Y.	Y'.	Z.	Z'.	$\lambda = \odot$'s True Longitude.	λ'	$\delta = \odot$'s Latitude.	Log. Rad. Vect. = ρ .	
Jan. 31.5	+6553999	4056	-6752121	1955	-2929493	9743	311 41 1.7	3.3	-0.68	936719	
Feb. 1.0	6619385	9440	6699110	8947	2906496	6743	312 11 27.8	29.3	0.70	937033	
1.5	6634236	4308	6645584	5423	2883273	3519	312 41 53.6	55.0	0.71	937352	
2.0	6748607	8657	6591547	1389	2859830	0074	313 12 19.0	20.4	0.72	937676	
2.5	6312436	2483	6537004	6848	2836167	6409	313 42 44.1	45.4	0.72	938005	
3.0	+6375738	5783	-6481960	1807	-2812286	2526	314 13 8.9	10.2	-0.71	938340	
3.5	6938508	8551	6426419	6268	2788189	8428	314 43 33.4	34.6	0.69	938680	
4.0	7000741	0782	6370386	0238	2763878	4115	315 13 57.5	58.7	0.67	939026	
4.5	7062433	2471	6313865	3719	2739355	9590	315 44 21.2	22.3	0.64	939377	
5.0	7023581	4617	6256861	6718	2714622	4855	316 14 44.5	45.6	0.60	939734	
5.5	+7184180	4214	-6199378	9238	-2689680	9911	316 45 7.5	8.5	-0.56	940097	
6.0	7244227	4259	6141421	1284	2664532	4761	317 15 30.1	31.0	0.51	940466	
6.5	7303717	3747	6082994	2859	2639181	9409	317 45 52.5	53.3	0.46	940841	
7.0	7362646	2675	6024102	3970	2613628	3854	318 16 14.5	15.3	0.40	941222	
7.5	7421013	1039	5964749	4620	2587874	8098	318 46 36.1	36.8	0.34	941608	
8.0	+7478810	8834	-5904939	4813	-2561922	2144	319 16 57.4	58.1	-0.28	942000	
8.5	7536034	6056	5844676	4553	2535773	5993	319 47 18.3	18.9	0.21	942399	
9.0	7592632	2702	5783966	3845	2500430	9648	320 17 38.9	39.5	0.14	942803	
9.5	7648749	8767	5722813	2695	2482896	3111	320 47 59.2	59.7	0.07	943213	
10.0	7704231	4247	5661221	1106	2456170	6384	321 18 19.2	19.7	-0.01	943628	
10.5	+7759125	9139	-5599194	9081	-2429256	9468	321 48 38.9	39.3	+0.05	944049	
11.0	7813426	3433	5536737	6627	2402156	2266	322 18 58.3	58.7	0.12	944475	
11.5	7867131	7141	5473854	3747	2374871	5079	322 49 17.4	17.7	0.18	944907	
12.0	7921235	0244	5410549	0445	2347403	7609	323 19 36.1	36.4	0.24	945345	
12.5	7972735	2742	5346827	6726	2319754	9958	323 49 54.5	54.7	0.29	945788	
13.0	+8024626	4632	-5282693	2596	-2291927	2129	324 20 12.7	12.9	+0.34	946235	
13.5	8075905	5909	5218151	8066	2263923	4123	324 50 30.8	30.9	0.38	946687	
14.0	8126568	6571	5153207	3115	2235744	5942	325 20 48.4	48.5	0.42	947143	
14.5	8176610	6611	5087864	7775	2207393	7589	325 51 5.7	5.7	0.45	947604	
15.0	8226028	6028	5022128	2042	2178872	9066	326 21 22.6	22.6	0.47	948068	
15.5	+8274817	4816	-4956003	5920	-2150183	0375	326 51 39.3	39.2	+0.48	948536	
16.0	8322973	2971	4889405	9415	2121328	1518	327 21 55.6	55.5	0.49	949008	
16.5	8370493	0490	4822608	2531	2092309	2497	327 52 11.7	11.6	0.49	949484	
17.0	8417373	7369	4755348	5274	2063130	3316	328 22 27.4	27.2	0.48	949963	
17.5	8463609	3603	4687721	7650	2033791	3975	328 52 42.8	42.6	0.46	950445	
18.0	+8509198	9191	-4619731	9664	-2004293	4475	329 22 57.9	57.6	+0.43	950930	
18.5	8554137	4129	4551383	1319	1974641	4821	329 53 12.7	12.4	0.39	951418	
19.0	8598422	8143	4482684	2623	1944838	5016	330 23 27.1	26.7	0.35	951909	
19.5	8642447	2037	4413639	3581	1914885	5061	330 53 41.2	40.8	0.31	952402	
20.0	8685009	4998	4344254	4200	1884784	4958	331 23 54.9	54.4	0.26	952898	
20.5	+8727305	7293	-4274533	4482	-1854537	4709	331 54 8.3	7.8	+0.21	953396	
21.0	8768390	8917	4204481	4433	1824148	4318	332 24 21.2	20.6	0.15	953896	
21.5	8809832	9868	4134105	4060	1793619	3787	332 54 33.7	33.1	0.09	954398	
22.0	8850160	0145	4063413	3372	1762962	3118	333 24 45.8	45.1	+0.03	954902	
22.5	8889758	9742	3992408	2370	1732149	2313	333 54 57.5	56.8	-0.03	955408	
23.0	+8928675	8658	-3921097	1062	-1701213	1375	334 25 8.8	8.0	-0.10	955916	
23.5	8966907	6390	3849485	9453	1670147	1307	334 56 19.7	18.9	0.16	956425	
24.0	9004450	4432	3777579	7551	1638954	9112	335 25 30.1	29.2	0.23	956936	
24.5	9041303	1284	3705385	5360	1607635	7791	335 55 40.1	39.2	0.29	957448	
25.0	9077462	7442	3632908	2887	1576194	6348	336 25 49.6	48.6	0.35	957962	
25.5	+9112926	2906	-3560155	0137	-1544632	4784	336 55 58.6	57.6	-0.41	958478	
26.0	9147692	7671	3487133	7119	1512953	3104	337 26 7.1	6.0	0.46	958995	
26.5	9181759	1738	3413846	3835	1481159	1308	337 56 15.2	14.1	0.51	959514	
27.0	9215124	5102	3340300	0292	1449252	9399	338 26 22.8	21.6	0.55	960035	
27.5	9247784	7762	3266502	6597	1417235	7380	338 56 29.9	28.7	0.58	960558	
28.0	+9297738	9715	-3192458	2457	-1386112	5255	339 26 36.5	35.2	-0.60	961084	
28.5	9310983	0960	3118174	8176	1352885	3026	339 56 42.6	41.3	0.61	961612	
29.0	9341518	1494	3043657	3663	1320557	0696	340 26 48.1	46.7	0.62	962142	
29.5	9371342	1318	2968913	8922	1288129	8264	340 56 53.1	51.7	0.62	962674	
Mar. 1.0	9400453	1429	2893947	3960	1255604	5739	341 26 57.6	56.1	0.62	963209	
1.5	+9428851	8827	-2818766	8782	-1222985	3118	341 57 1.6	0.1	-0.61	963747	

SUN'S COÖRDINATES, 1868. 393

Date, 1868.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
	X.	Y.	Z.	X.	Y.	Z.	$\lambda = \odot$'s True Longitude.	μ	$\delta = \odot$'s Latitude.	Log. Rad. Vect. = ρ .
Mar. 2.0	+ .9456533	6509	— .2743375	3305	— .1190275	0406	342 27 5.0	5.4	— 0.59	164288
2.5	.9483498	3474	.2667780	7803	.1157476	7615	342 57 7.8	6.2	0.56	964832
3.0	.9509744	9720	.2591986	2013	.1124590	4717	343 27 10.1	8.4	0.53	165378
3.5	.9535270	5246	.2516100	6030	.1091620	1745	343 57 11.9	10.2	0.49	166127
4.0	.9560074	0050	.2439826	9660	.1058569	8692	344 27 13.2	11.4	0.44	166479
4.5	+ .9584156	4132	— .2363471	3508	— .1025439	5560	344 57 13.9	12.1	— 0.39	967035
5.0	.9617514	7490	.2286941	6981	.0982232	2351	345 27 14.1	12.3	0.33	167594
5.5	.9630147	0123	.2210240	0283	.0958952	9069	345 57 13.8	11.9	0.27	968157
6.0	.9652055	2031	.2133375	3422	.0925600	5715	346 27 13.0	11.1	0.20	968723
6.5	.9673236	3212	.2056351	6401	.0892179	2292	346 57 11.7	9.8	0.14	969293
7.0	+ .9693688	3665	— .1979174	9227	— .0858672	8803	347 27 9.9	7.9	— 0.07	969866
7.5	.9713411	3388	.1901850	1906	.0825141	5250	347 57 7.6	5.6	0.00	970443
8.0	.9732404	2380	.1824334	4444	.0791528	1635	348 27 4.8	2.7	+ 0.08	971024
8.5	.9750667	0445	.1746781	6844	.0757855	7060	348 56 61.5	59.4	0.15	971608
9.0	.9768199	8178	.1669047	9113	.0724126	4228	349 26 57.7	55.5	0.21	972196
9.5	+ .9784999	4978	— .1591188	1257	— .0690342	0442	349 56 53.4	51.2	+ 0.27	972787
10.0	.9801066	1046	.1513209	3282	.0656507	6605	350 26 48.6	46.3	0.33	973382
10.5	.9816399	6379	.1435114	5190	.0622622	2718	350 56 43.4	41.1	0.39	973980
11.0	.9830996	0977	.1356910	6989	.0588689	8783	351 26 37.7	35.4	0.44	974581
11.5	.9844856	4837	.1278601	8683	.0554711	4803	351 56 31.6	29.3	0.48	975185
12.0	+ .9857978	7969	— .1200194	0280	— .0520691	0781	352 26 25.1	22.7	+ 0.52	975791
12.5	.9870362	0345	.1121693	1782	.0486632	6720	352 56 18.1	15.7	0.55	976400
13.0	.9882908	1992	.1043105	3197	.0452535	2620	353 26 10.7	8.2	0.57	977012
13.5	.9892914	2898	.0964435	4530	.0418403	8486	353 56 2.9	0.4	0.58	977627
14.0	.9903079	3064	.0885689	5788	.0384239	4320	354 26 54.6	52.0	0.59	978244
14.5	+ .9912502	2488	— .0806874	6976	— .0350045	0124	354 55 45.9	43.3	+ 0.59	978862
15.0	.9921182	1169	.0727395	8100	.0315823	5900	355 25 36.8	34.1	0.58	979482
15.5	.9929119	9107	.0649059	9167	.0281576	1651	355 55 27.2	24.5	0.56	980104
16.0	.9936312	6301	.0570071	0182	.0247307	7380	356 25 17.2	14.5	0.54	980728
16.5	.9942760	2750	.0491037	1151	.0213018	3089	356 55 6.7	3.9	0.51	981353
17.0	+ .9948462	8453	— .0411962	2079	— .0178712	8780	357 24 55.8	53.0	+ 0.48	981979
17.5	.9953417	3409	.0332553	2973	.0144391	4457	357 54 44.5	41.7	0.44	982605
18.0	.9957625	7618	.0253716	3840	.0110058	0122	358 24 32.7	29.8	0.39	983232
18.5	.9961087	1081	.0174556	4683	.0075715	5777	358 54 20.5	17.6	0.34	983859
19.0	.9963812	3798	.0095379	5509	.0041365	1424	359 24 7.8	4.8	0.28	984486
19.5	+ .9965769	5767	— .0016192	6325	— .0007013	7070	359 53 54.7	51.7	+ 0.22	985113
20.0	.9966988	6986	+ .0062099	2863	+ .0027341	7286	0 23 41.2	38.1	0.16	985741
20.5	.9967460	7459	.0142188	2049	.0061694	1641	0 53 27.2	24.1	0.09	986360
21.0	.9967184	7185	.0221368	1226	.0096044	5993	1 23 12.7	9.6	+ 0.03	986916
21.5	.9966160	6162	.0300533	0388	.0130389	0340	1 52 57.8	54.6	— 0.03	987523
22.0	+ .9964388	4392	+ .0379678	9520	+ .0164724	4677	2 22 42.4	39.2	— 0.10	988249
22.5	.9961868	1873	.0458797	8645	.0199047	9002	2 52 26.4	23.2	0.16	988874
23.0	.9958601	8608	.0537880	7725	.0233355	3312	3 22 9.9	6.6	0.22	989497
23.5	.9954588	4596	.0616923	6765	.0267646	7605	3 51 52.9	49.6	0.27	990120
24.0	.9949829	9839	.0695919	5758	.0301917	1878	4 21 35.5	32.1	0.32	990742
24.5	+ .9944326	4337	+ .0774961	4697	+ .0336165	6128	4 51 17.6	14.2	— 0.36	991362
25.0	.9938079	8092	.0853743	3576	.0370387	0352	5 20 59.0	55.5	0.40	991982
25.5	.9931089	1103	.0932561	2301	.0404581	4548	5 50 39.9	36.4	0.43	992600
26.0	.9923357	3373	.1011308	1135	.0438744	8713	6 20 20.2	16.7	0.46	993218
26.5	.9914886	4904	.1089975	9799	.0472873	2844	6 49 60.0	56.4	0.48	993835
27.0	+ .9905675	5695	+ .1168557	8378	+ .0506966	6939	7 19 39.2	35.6	— 0.49	994452
27.5	.9895726	5747	.1267049	6867	.0541021	0996	7 49 17.9	14.2	0.49	995068
28.0	.9885040	5063	.1325445	5260	.0575035	5012	8 18 56.0	52.3	0.49	995684
28.5	.9873619	3644	.1403739	3551	.0609005	8984	8 48 33.5	29.7	0.48	996299
29.0	.9861464	1491	.1481925	1734	.0642929	2910	9 18 10.4	6.6	0.47	996913
29.5	+ .9848577	8606	+ .1559998	9804	+ .0676805	6788	9 47 46.7	42.9	— 0.44	997527
30.0	.9834961	4992	.1637952	7755	.0710629	0614	10 17 22.5	18.6	0.41	998140
30.5	.9820616	0649	.1715782	5582	.0744398	4385	10 46 57.7	53.8	0.37	998754
31.0	.9805545	5580	.1793481	3278	.0778110	8099	11 16 32.3	28.4	0.33	999367
31.5	.9789749	9786	.1871045	0839	.0811764	1755	11 46 6.3	2.3	0.28	999980
Apr. 1.0	+ .9773231	3270	+ .1948467	8258	+ .0845357	5350	12 15 39.8	35.8	— 0.22	100592

The first figures of this and the following logarithms are 0.0.

394 SUN'S COÖRDINATES, 1868.

Date, 1868.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
	X.	X'.	Y.	Y'.	Z.	Z'.	$\lambda = \odot$'s True Longitude.	λ'	$\delta = \odot$'s Latitude.	Log. Rad. Vect. = ρ .
Apr. 1.5	+9755993	6034	+2025742	5530	+0878886	8881	12 45 12.7	8.6	-0.16	001206
2.0	.9738036	8079	.2102864	2650	.0912349	2346	13 14 45.0	40.9	0.10	001819
2.5	.9719362	9407	.2179828	9611	.0945744	5743	13 44 16.8	12.7	-0.04	002434
3.0	.9699973	.0021	.2256629	6409	.0979067	9068	14 13 47.9	43.7	+0.03	003048
3.5	.9679672	9922	.2333261	3038	.1012318	2321	14 43 18.5	14.3	0.09	003663
4.0	+9659059	9112	+2409719	9494	+1045493	5499	15 12 48.6	44.3	+0.16	004278
4.5	.9637537	7592	.2485908	5770	.1078591	8599	15 42 18.1	13.8	0.22	004894
5.0	.9615309	5367	.2562093	1863	.1111609	1620	16 11 47.0	42.6	0.29	005511
5.5	.9592376	2436	.2637998	7765	.1144544	4557	16 41 15.4	11.0	0.35	006129
6.0	.9568740	8803	.2713709	3474	.1177394	7410	17 10 43.3	38.8	0.42	006747
6.5	+9544404	4469	+2789220	8982	+1210158	0176	17 40 10.7	6.2	+0.48	007367
7.0	.9519369	9437	.2864527	4296	.1242834	2854	18 9 37.5	32.9	0.53	007987
7.5	.9493637	3708	.2939625	9381	.1275419	5441	18 38 63.8	50.2	0.57	008609
8.0	.9467212	7286	.3014508	4262	.1307910	7935	19 8 29.7	25.0	0.61	009231
8.5	.9440094	1171	.3089171	8922	.1340306	0333	19 37 55.1	50.4	0.64	009854
9.0	+9412286	2366	+3163610	3359	+1372604	2634	20 7 20.1	15.3	+0.67	010477
9.5	.9383790	3873	.3237820	7566	.1404803	4835	20 36 44.5	39.7	0.69	011101
10.0	.9354608	4694	.3311795	1539	.1436900	6935	21 6 8.5	3.6	0.70	011725
10.5	.9324742	4831	.3385531	5272	.1468892	8929	21 35 32.0	27.1	0.70	012350
11.0	.9294194	4286	.3459022	8761	.1500777	0816	22 4 55.1	50.1	0.70	012974
11.5	+9262966	3061	+3532263	1999	+1532554	2595	22 34 17.7	12.7	+0.69	013599
12.0	.9231060	1158	.3605250	4984	.1564219	4263	23 3 39.9	34.8	0.67	014223
12.5	.9198477	8578	.3677976	7707	.1595771	5817	23 32 61.7	56.6	0.64	014847
13.0	.9165220	5324	.3750437	0166	.1627207	7256	24 2 23.0	17.8	0.61	015469
13.5	.9131291	1398	.3822628	2354	.1658525	8576	24 31 43.9	38.7	0.57	016091
14.0	+9096692	6803	+3894543	4267	+1689724	9778	25 0 64.4	59.1	+0.53	016711
14.5	.9061426	1540	.3966177	5898	.1720801	0857	25 30 24.5	19.2	0.48	017330
15.0	.9025496	5613	.4037525	7244	.1751752	1810	25 59 44.1	38.7	0.42	017948
15.5	.8988905	9025	.4108582	8298	.1782577	2637	26 28 63.3	57.9	0.36	018565
16.0	.8951655	1779	.4179342	9056	.1813272	3335	26 58 22.1	16.6	0.30	019179
16.5	+8913749	3876	+4249799	9510	+1843835	3900	27 27 40.5	35.0	+0.24	019791
17.0	.8875190	5320	.4319947	9656	.1874264	4332	27 56 58.5	52.9	0.17	020401
17.5	.8835980	6113	.4389781	9487	.1904558	4628	28 26 16.1	10.5	0.11	021008
18.0	.8796122	6259	.4459296	9000	.1934713	4786	28 55 33.2	27.5	+0.04	021613
18.5	.8755619	5759	.4528487	8188	.1964728	4803	29 24 49.9	44.2	-0.02	022215
19.0	+8714474	4617	+4597347	7046	+1994600	4678	29 54 6.1	0.3	-0.08	022814
19.5	.8672689	2835	.4665872	5569	.2024327	4407	30 23 21.9	16.1	0.14	023409
20.0	.8630268	0418	.4734057	3752	.2053908	3990	30 52 37.2	31.3	0.19	024001
20.5	.8587215	7368	.4801896	1589	.2083339	3423	31 21 52.1	46.2	0.24	024589
21.0	.8543534	3690	.4869385	9076	.2112618	2705	31 51 6.6	0.6	0.28	025174
21.5	+8499228	9387	+4936519	6208	+2141743	1832	32 20 20.6	14.6	-0.32	025756
22.0	.8454300	4463	.5003292	2979	.2170712	0803	32 49 34.2	28.1	0.35	026334
22.5	.8408754	8920	.5069700	9385	.2199522	9615	33 18 47.3	41.2	0.37	026909
23.0	.8362596	2766	.5135737	5420	.2228172	8268	33 47 59.9	53.7	0.39	027480
23.5	.8315828	6001	.5201398	1079	.2256659	6757	34 17 12.0	5.8	0.40	028048
24.0	+8268454	8631	+5266678	6357	+2284981	5081	34 46 23.6	17.3	-0.40	028612
24.5	.8220479	0660	.5331572	1249	.2313136	3238	35 15 34.7	28.4	0.39	029173
25.0	.8171907	2091	.5396076	5751	.2341122	1227	35 44 45.3	38.9	0.38	029730
25.5	.8122742	2929	.5460185	9858	.2368937	9044	36 13 55.4	49.0	0.36	030284
26.0	.8072988	3179	.5523894	3565	.2396579	6689	36 42 65.0	58.5	0.33	030835
26.5	+8022649	2843	+5587199	6868	+2424046	4159	37 12 14.1	7.6	-0.29	031383
27.0	.7971730	1928	.5650006	9764	.2451337	1452	37 41 22.7	16.1	0.25	031927
27.5	.7920235	0437	.5712581	2247	.2478449	8566	38 10 30.8	24.2	0.20	032468
28.0	.7868168	8374	.5774650	4315	.2505381	5500	38 39 38.4	31.7	0.15	033006
28.5	.7815533	5743	.5836299	5962	.2532130	2251	39 8 45.4	38.6	0.09	033541
29.0	+7762335	2549	+5897523	7185	+2558695	8819	39 37 51.9	45.0	-0.03	034074
29.5	.7708579	8797	.5958317	7977	.2585074	5200	40 6 58.0	51.1	+0.03	034604
30.0	.7654269	4491	.6018677	8336	.2611265	1394	40 35 63.6	56.6	0.10	035132
30.5	.7599409	9635	.6078601	8259	.2637267	7398	41 5 8.6	1.6	0.17	035657
May. 1.0	.7544004	4234	.6138083	7740	.2663078	3213	41 34 13.1	6.0	0.24	036179
1.5	+7488058	8202	+6197120	6776	+2688696	8832	42 3 17.1	10.0	+0.31	036699

SUN'S COÖRDINATES, 1868. 395

Date, 1868.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
	X.	X'.	Y.	Y'.	Z.	Z'.	$\lambda = \odot$'s True Longitude.	λ'	$\delta = \odot$'s Latitude.	Log. Rad. Vect. = ρ .
May 2.0	+7431577	1815	+6255709	5364	+2714119	4257	42 32 20.6	13.4	+0.37	0.0
2.5	7374564	4806	6313846	3500	2739346	9486	43 1 23.7	16.5	0.44	037217
3.0	7317023	7269	6371528	1181	2764375	4518	43 30 26.3	19.0	0.50	037733
3.5	7258959	9209	6428752	8404	2789205	9350	43 59 28.4	21.1	0.56	038247
4.0	7200376	0631	6485513	5164	2813834	3962	44 28 30.0	22.6	0.61	038760
4.5	+7141280	1539	+6541809	1459	+2838261	8411	44 57 31.2	23.8	+0.65	039271
5.0	7081673	1936	6597636	7235	2862484	2637	45 26 32.0	24.5	0.69	039781
5.5	7021560	1827	6652991	2639	2886501	6656	45 55 32.4	24.9	0.72	040289
6.0	6960945	1216	6707869	7517	2910312	0469	46 24 32.3	24.7	0.75	040796
6.5	6899832	0107	6762268	1915	2933914	4073	46 53 31.9	24.3	0.77	041301
7.0	+6838226	8505	+6816184	5831	+2957306	7468	47 22 31.1	23.4	+0.79	0.0
7.5	6776131	6414	6869613	9259	2980487	0651	47 51 29.8	22.0	0.79	042306
8.0	6713551	3839	6922552	2198	3003455	3622	48 20 28.1	20.2	0.79	042806
8.5	6650490	0783	6974908	4643	3026208	6377	48 49 26.1	18.1	0.78	043304
9.0	6586954	7251	7026347	6592	3048745	8917	49 18 23.7	15.6	0.76	043800
9.5	+6522045	3246	+7078396	8040	+3071065	1239	49 47 21.0	12.9	+0.73	044295
10.0	6458469	8775	7129340	8984	3093166	3343	50 16 17.9	9.7	0.70	044787
10.5	6393529	3839	7179777	9420	3115047	5226	50 45 14.6	6.4	0.66	045277
11.0	6328129	8444	7229703	9346	3136705	6887	51 14 10.9	2.6	0.62	045765
11.5	6262275	2595	7279115	8758	3158140	8324	51 42 66.8	58.5	0.57	046250
12.0	+6195971	6206	+7328010	7653	+3179350	9537	52 11 62.4	54.0	+0.52	046733
12.5	6129221	8551	7376384	6026	3200334	0523	52 40 57.7	49.2	0.46	047213
13.0	6062031	2366	7424232	3874	3221089	1281	53 9 52.8	44.2	0.40	047691
13.5	5994405	4745	7471551	1193	3241615	1809	53 38 47.6	38.9	0.34	048166
14.0	5926347	6612	7518328	7980	3261910	2107	54 7 42.1	33.3	0.27	048637
14.5	+5857861	8211	+7564589	4231	+3281973	2172	54 36 36.2	27.4	+0.21	049104
15.0	5788054	9309	7610300	3942	3301802	2004	55 5 30.0	21.1	0.14	049568
15.5	5719629	9989	7655469	5111	3321306	1600	55 34 23.5	14.6	0.08	050028
16.0	5649892	0257	7700091	3733	3340754	0960	56 3 16.8	7.8	+0.02	050483
16.5	5579747	0117	7744164	3806	3359873	0081	56 32 9.8	0.8	-0.04	050934
17.0	+5509199	9574	+7787685	7328	+3378751	8162	57 0 62.5	53.4	-0.09	051380
17.5	5432853	8633	7830650	0293	3397387	7600	57 29 54.9	45.7	0.14	051822
18.0	5366914	7209	7873065	2698	3415781	5097	57 58 47.1	37.8	0.19	052260
18.5	5295188	5578	7914898	4541	3433932	4150	58 27 39.1	29.7	0.23	052693
19.0	5223080	3475	7956174	5818	3451838	2059	58 56 30.7	21.2	0.27	053122
19.5	+5150596	0906	+7996881	6525	+3469408	9721	59 25 22.0	12.5	-0.29	053544
20.0	5077742	8148	8037014	6659	3486910	7136	59 54 12.9	3.3	0.31	053961
20.5	5004525	4936	8076572	6218	3504072	4300	60 22 63.5	53.9	0.32	054373
21.0	4930950	1366	8115550	5197	3520982	1213	60 51 53.9	44.2	0.33	054780
21.5	4857022	7443	8153947	3695	3537640	7873	61 20 44.0	34.3	0.32	055181
22.0	+4782747	3174	+8191760	1409	+3554045	4281	61 49 33.7	23.9	-0.31	055576
22.5	4708131	8563	8228966	8636	3570196	0434	62 18 23.0	13.1	0.29	055966
23.0	4633180	3617	8265622	5273	3586092	6333	62 47 12.0	2.0	0.26	056351
23.5	4557899	8341	8301666	1318	3601732	1975	63 15 60.6	50.5	0.23	056730
24.0	4482293	2741	8337116	6769	3617114	7359	63 44 48.9	38.7	0.19	057103
24.5	+4406368	6821	+8371970	1624	+3632238	2485	64 13 36.9	26.7	-0.14	057470
25.0	4330130	0588	8406224	5880	3647102	7352	64 42 24.6	14.3	0.09	057832
25.5	4253586	4049	8439876	9533	3661706	1958	65 11 12.0	1.7	-0.04	058189
26.0	4176741	7210	8472226	2585	3676048	6303	65 39 59.0	48.6	+0.02	058541
26.5	4099601	0075	8505371	5031	3690128	0385	66 8 45.7	35.2	0.08	058887
27.0	+4022172	2651	+8537210	6872	+3703945	4205	66 37 32.1	21.5	+0.15	059228
27.5	3944461	4945	8568440	8104	3717497	7759	67 6 18.1	7.4	0.22	059564
28.0	3866474	6064	8599060	8726	3730784	1049	67 34 63.7	52.9	0.29	059896
28.5	3788216	8711	8629068	8736	3743806	4073	68 3 49.0	38.1	0.36	060223
29.0	3709603	0193	8658462	8132	3756562	6832	68 32 34.0	23.0	0.42	060545
29.5	+3630910	1415	+8687241	6913	+3769051	9323	69 1 18.6	7.6	+0.48	060863
30.0	3551874	2385	8715403	5078	3781272	1547	69 29 62.9	51.8	0.54	061177
30.5	3472590	3106	8742447	2624	3793225	3502	69 58 46.9	55.8	0.59	061486
31.0	3393065	3586	8769872	9551	3804909	5189	70 27 30.6	19.4	0.64	061792
31.5	3313303	3829	8796176	5857	3816324	6606	70 56 14.0	2.7	0.69	062094
June 1.0	+3233310	3843	+8821858	1542	+3827468	7753	71 24 57.0	45.6	+0.73	062393

396 SUN'S COÖRDINATES, 1868.

Date, 1868.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
	X.	X'.	Y.	Y'.	Z.	Z'.	$\lambda = \odot$'s True Longitude.	λ'	$\delta = \odot$'s Latitude.	Log. Rad. Vect. = ρ .
June 1.5	+3153092	3629	+8846916	6603	+3838342	8629	71 53 30.7	28.2	+0.77	0.0
2.0	3072654	3196	8871350	1040	3848944	9234	72 22 22.2	10.6	0.80	0.6279
2.5	2992001	2548	8895158	4851	3859275	9567	72 50 64.4	52.7	0.82	0.6350
3.0	2911139	1691	8918338	8034	3869333	9628	73 19 46.4	34.6	0.84	0.63832
3.5	2830074	0631	8940890	0589	3879118	9415	73 48 28.1	16.3	0.85	0.64111
4.0	+2748812	9374	+8962813	2515	+3888629	8929	74 16 69.5	57.6	+0.85	0.64366
4.5	2667357	7924	8984105	3810	3897866	8168	74 45 50.7	38.8	0.84	0.64657
5.0	2585714	6286	9004766	4474	3906829	7133	75 14 31.7	19.7	0.83	0.64925
5.5	2503889	4466	9024794	4505	3915517	5823	75 43 12.5	0.4	0.81	0.65191
6.0	2421888	2470	9044188	3903	3923929	4238	76 11 53.1	40.9	0.78	0.65453
6.5	+2339716	0303	+9062946	2665	+3932065	2376	76 40 33.5	21.2	+0.74	0.65713
7.0	2257377	7969	9081068	0791	3939025	0238	77 9 13.7	1.3	0.70	0.65969
7.5	2174878	5475	9098551	8277	3947508	7823	77 37 53.8	41.3	0.65	0.66221
8.0	2092223	2825	9115395	5125	3954813	5131	78 6 33.7	21.1	0.60	0.66469
8.5	2009418	0025	9131598	1332	3961840	2160	78 35 13.5	0.9	0.54	0.66714
9.0	+1926469	7081	+9147159	6897	+3968589	8911	79 3 53.1	40.4	+0.48	0.66955
9.5	1843381	3998	9162977	1819	3975057	5381	79 32 32.6	19.9	0.42	0.67193
10.0	1760159	0781	9176351	6097	3981246	1573	80 0 72.0	59.2	0.35	0.67427
10.5	1676810	7437	9189979	9729	3987155	7484	80 29 51.3	38.4	0.29	0.67657
11.0	1593340	3972	9202961	2715	3992784	3115	80 58 30.5	17.5	0.22	0.67883
11.5	+1509754	0391	+9215295	5053	+3998132	8465	81 26 69.6	56.5	+0.16	0.68104
12.0	1426058	6700	9226079	6741	4003198	3534	81 55 48.6	35.4	0.09	0.68320
12.5	1342257	2904	9238012	7778	4007981	8319	82 24 27.5	14.2	+0.03	0.68531
13.0	1258358	9010	9248393	8164	4012481	2821	82 52 66.3	52.9	-0.03	0.68737
13.5	1174366	5023	9258121	7896	4016698	7040	83 21 45.0	31.6	0.09	0.68939
14.0	+1090286	0948	+9267195	6975	+4020632	0977	83 50 23.7	10.2	-0.14	0.69135
14.5	1006126	6703	9275614	5398	4024282	4629	84 18 62.3	48.8	0.18	0.69326
15.0	0921891	2562	9283377	3166	4027648	7998	84 47 40.8	27.2	0.22	0.69511
15.5	0837587	8263	9290484	0277	4030730	1082	85 16 19.2	5.5	0.25	0.69690
16.0	0753322	3902	9296934	6732	4033526	3881	85 44 57.6	43.8	0.27	0.69863
16.5	+0668801	9486	+9302726	2529	+4036038	6395	86 13 35.8	21.9	-0.28	0.70030
17.0	0584330	5019	9307860	7668	4038264	8623	86 42 14.0	0.0	0.29	0.70191
17.5	0499816	0510	9312335	2148	4040206	0567	87 10 52.1	38.0	0.29	0.70346
18.0	0415266	5964	9316149	5967	4041862	2226	87 39 30.1	15.9	0.28	0.70494
18.5	0330685	1387	9319302	9125	4043232	3508	88 7 68.0	53.8	0.27	0.70636
19.0	+0246080	6786	+9321793	1621	+4044316	4684	88 36 45.8	31.5	-0.25	0.70771
19.5	0161457	2167	9323624	3457	4045113	5483	89 5 23.5	9.2	0.22	0.70900
20.0	+0076822	7536	9324795	4633	4045623	5906	89 33 61.1	46.7	0.19	0.71022
20.5	-0007819	7101	9325335	5148	4045847	6222	90 2 38.7	24.2	0.15	0.71137
21.0	0092459	1737	9325155	5003	4045784	6161	90 31 16.1	1.5	0.10	0.71246
21.5	-0177092	6366	+9324344	4197	+4045435	5814	90 59 53.5	38.8	-0.05	0.71348
22.0	0261711	0982	9322874	2733	4044800	5182	91 28 30.8	16.0	+0.01	0.71444
22.5	0346310	5577	9320744	0638	4043879	4263	91 56 67.9	53.0	0.07	0.71534
23.0	0430882	0146	9317955	7824	4042672	3058	92 25 44.9	29.9	0.14	0.71618
23.5	0515420	4680	9314507	4381	4041179	1567	92 54 21.8	6.8	0.21	0.71695
24.0	-0599919	9176	+9310400	0280	+4039401	9792	93 22 58.5	43.4	+0.28	0.71766
24.5	0684373	3626	9305636	5521	4037337	7730	93 51 35.2	20.0	0.35	0.71831
25.0	0768775	8925	9300215	0106	4034988	5383	94 19 71.8	56.5	0.41	0.71890
25.5	0853120	2367	9294137	4034	4032354	2751	94 48 48.2	32.8	0.48	0.71944
26.0	0937400	6644	9287404	7307	4029437	9837	95 17 24.5	9.0	0.54	0.71991
26.5	-1021610	0851	+9280016	9925	+4026235	6637	95 45 60.7	45.1	+0.60	0.72033
27.0	1105744	4982	9271975	1890	4022750	3154	96 14 36.7	21.0	0.67	0.72070
27.5	1189796	9031	9263282	3203	4018981	9387	96 42 72.7	56.9	0.70	0.72102
28.0	1273759	2991	9253938	3865	4014929	5338	97 11 48.5	32.6	0.75	0.72129
28.5	1357629	6858	9243944	3877	4010505	1006	97 40 24.2	8.3	0.79	0.72151
29.0	-1441399	0625	+9233301	3241	+4005980	6393	98 8 59.8	43.8	+0.82	0.72168
29.5	1525064	4287	9222010	1956	4001083	1498	98 37 35.3	19.3	0.84	0.72181
30.0	1608616	7839	9210073	0026	3995905	6323	99 5 70.8	54.7	0.86	0.72189
30.5	1692058	1275	9197490	7450	3990446	0866	99 34 46.2	30.0	0.87	0.72194
July 1.0	1775375	4589	9184263	4230	3984708	5130	100 3 21.6	5.3	0.87	0.72194
1.5	-1858665	7776	+9170393	0366	+3978690	9114	100 31 56.9	40.5	+0.86	0.72190

SUN'S COÖRDINATES, 1868. 397

Date, 1868.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.				
	X.	X'.	Y.	Y'.	Z.	Z'.	$\lambda = \odot$'s True Longitude.	λ'	$\delta = \odot$'s Latitude.	Log. Rad. Vect. = ρ .	
July 2.0	—1941623	0831	+9155881	5861	+3972394	2821	101 0 32.2	15.7	+0.85	0.0	
2.5	2024543	3748	.9140728	0715	.3965819	6248	101 28 67.5	50.9	0.83	072182	
3.0	2107319	6522	.9124936	4930	.3958966	9397	101 57 42.7	26.0	0.80	072170	
3.5	2189947	9146	.9108506	8505	.3951835	2268	102 26 17.9	1.1	0.76	072155	
4.0	2272422	1618	.9091437	1445	.3944429	4865	102 54 53.0	36.1	0.72	072136	
4.5	—2354738	3931	+9073733	3748	+3936746	7184	103 23 28.2	11.2	+0.68	072113	
5.0	2436890	6080	.9055395	5418	.3928788	9228	103 51 63.4	46.3	0.63	072087	
5.5	2518872	8059	.9036423	6453	.3920554	0996	104 20 38.7	21.5	0.57	072056	
6.0	2600679	9863	.9016819	6857	.3912046	2491	104 48 74.0	56.7	0.51	072022	
6.5	2682306	1487	.8996583	6628	.3903263	3710	105 17 49.4	32.1	0.45	071985	
7.0	—2763746	2924	+8975716	5769	+3894206	4655	105 46 24.9	7.5	+0.38	071944	
7.5	2844995	4170	.8954219	4279	.3884876	5327	106 14 60.4	43.0	0.32	071900	
8.0	2926047	5220	.8932094	3162	.3875274	5727	106 43 36.1	18.6	0.25	071852	
8.5	3006395	6165	.8909342	9417	.3865400	5854	107 11 71.8	54.2	0.19	071800	
9.0	3087535	6703	.8885965	6048	.3855254	5710	107 40 47.7	30.0	0.12	071744	
9.5	—3167961	7127	+8861963	2053	+3844837	5295	108 9 23.6	5.8	+0.05	071683	
10.0	3248167	7331	.8837337	7435	.3834150	4610	108 37 59.7	41.8	—0.01	071618	
10.5	3328148	7310	.8812089	2195	.3823193	3654	109 6 25.9	7.9	0.07	071549	
11.0	3407899	7059	.8786220	6334	.3811967	2430	109 34 72.2	54.1	0.12	071475	
11.5	3487414	6572	.8759732	9854	.3800473	0938	110 3 48.7	30.6	0.16	071396	
12.0	—3566687	5844	+8732626	2756	+3788711	9178	110 32 25.3	7.1	—0.20	071313	
12.5	3645713	4869	.8704903	5041	.3776682	7150	111 0 62.1	43.9	0.23	071224	
13.0	3724486	3641	.8676565	6711	.3764387	4857	111 29 39.0	20.7	0.26	071130	
13.5	3803000	2154	.8647613	7767	.3751826	2298	111 57 76.1	57.7	0.28	071031	
14.0	3881249	0403	.8618950	8212	.3738999	9473	112 26 53.4	34.9	0.29	070927	
14.5	—3969228	8381	+8587877	8047	+3725908	6383	112 55 30.8	12.2	—0.29	070817	
15.0	4036930	6083	.8557096	7275	.3712554	3031	113 23 68.4	49.7	0.29	070701	
15.5	4114348	3501	.8525708	5895	.3698937	9416	113 52 46.1	27.4	0.28	070580	
16.0	4191478	0631	.8493716	3912	.3685058	5539	114 21 24.0	5.2	0.26	070453	
16.5	4268313	7466	.8461122	1327	.3670918	1400	114 49 62.1	43.3	0.24	070319	
17.0	—4344847	4001	+8427927	8141	+3656518	7002	115 18 40.3	21.4	—0.21	070179	
17.5	4421075	0229	.8394133	4355	.3641859	2345	115 46 78.7	59.9	0.17	070033	
18.0	4496901	6146	.8359744	9975	.3626942	7430	116 15 57.2	38.2	0.13	069880	
18.5	4572589	1744	.8324762	5002	.3611768	2257	116 44 35.8	16.7	0.08	069721	
19.0	4647863	7019	.8289189	9438	.3596338	6829	117 12 74.6	55.4	—0.02	069555	
19.5	—4722807	1964	+8253027	3285	+3580653	1146	117 41 53.5	34.2	+0.04	069383	
20.0	4797416	6574	.8216281	6548	.3564714	5209	117 41 53.5	34.2	+0.04	069205	
20.5	4871684	0843	.8178952	9228	.3548522	9019	118 10 32.6	13.2	0.10	069021	
21.0	4945606	4767	.8141043	1328	.3532079	2578	118 38 71.8	52.4	0.16	068921	
21.5	5019176	8338	.8102556	2850	.3515386	5887	119 7 51.2	31.7	0.23	068830	
22.0	—5092388	1552	+8063495	3798	+3498443	8945	119 36 30.7	11.2	0.30	068632	
22.5	5165237	4402	.8023864	4176	.3481253	1757	119 36 30.7	11.2	0.30	068428	
23.0	5237718	6885	.7983665	3987	.3463815	4320	120 4 70.3	50.7	+0.37	068218	
23.5	5309826	8994	.7942902	3233	.3446133	6640	120 33 50.0	30.4	0.44	068002	
24.0	5381555	0725	.7901577	1917	.3428207	8716	121 2 29.9	10.2	0.50	067779	
24.5	—5452900	2072	+7859694	0043	+3410039	0550	121 30 69.9	50.1	0.56	067550	
25.0	5523856	3030	.7817256	7615	.3391630	2142	121 59 50.0	30.1	0.61	067316	
25.5	5594418	3594	.7774267	4635	.3372981	3495	122 28 30.2	10.2	+0.66	067076	
26.0	5664580	3758	.7730730	1108	.3354095	4610	122 56 70.6	50.5	0.71	066831	
26.5	5734338	3517	.7686649	7036	.3334972	5489	123 25 51.0	30.9	0.75	066581	
27.0	—5803687	2868	+7642026	2422	+3315614	6132	123 54 31.6	11.4	0.79	066326	
27.5	5872623	1806	.7606866	7271	.3296022	6542	124 22 72.3	52.1	0.82	066066	
28.0	5941141	0326	.7551173	1588	.3276198	6719	124 51 53.2	32.9	+0.84	065801	
28.5	6009237	8424	.7504949	5373	.3256143	6665	125 20 34.2	13.9	0.85	065532	
29.0	6076906	6095	.7458198	8631	.3235859	6383	125 48 75.3	54.9	0.86	065258	
29.5	—6144143	3334	+7410923	1365	+3215347	5873	126 17 56.5	36.0	0.86	064980	
30.0	6210944	0138	.7363127	3579	.3194609	5136	126 46 37.9	17.3	0.85	064698	
30.5	6277305	6501	.7314813	5274	.3173646	4175	127 14 79.4	58.7	+0.83	064412	
31.0	6343221	2420	.7265986	6456	.3152450	2990	127 43 61.1	40.3	0.81	064122	
31.5	6408688	7890	.7216648	7127	.3131052	1584	128 12 43.0	22.2	0.78	063829	
Aug. 1.0	—6473701	2806	+7166802	7290	+3109424	9957	128 41 25.0	4.1	0.74	063532	
							129 9 67.2	46.3	0.69	063232	
							129 38 49.7	28.7	+0.64	062929	

398 SUN'S COÖRDINATES, 1868.

Date, 1868.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.				
	X.	X'.	Y.	Y'.	Z.	Z'.	$\lambda = \odot$'s True Longitude.	λ'	$\delta = \odot$'s Latitude.	Log. Rad. Vect. = ρ .	
Aug. 1.5	—6538258	7466	+7116452	6949	+3087577	8111	130 7 32.4	11.4	+0.58	0.0	
2.0	.6602354	1565	.7065600	6106	.3065512	6047	130 35 75.3	54.2	0.52	062313	
2.5	.6665084	5198	.7014251	4766	.3043231	3768	131 4 58.4	37.2	0.46	062000	
3.0	.6729144	8362	.6962408	2932	.3020736	1274	131 33 41.7	20.4	0.39	061684	
3.5	.6791830	1051	.6910075	0608	.2998028	8567	132 2 25.3	4.0	0.33	061365	
4.0	—6854037	3261	+6857254	7796	+2975108	5648	132 30 69.1	47.7	+0.26	061043	
4.5	.6915761	4988	.6803950	4501	.2951978	2520	132 59 53.2	31.8	0.20	060718	
5.0	.6976998	6229	.6750165	0725	.2928640	9183	133 28 37.6	16.1	0.13	060390	
5.5	.7037743	6978	.6695002	6471	.2905094	5638	133 57 22.3	0.8	0.07	060060	
6.0	.7097992	7231	.6641165	1743	.2881343	1888	134 25 67.3	45.7	+0.01	059727	
6.5	—7157741	6984	+6585957	6544	+2857388	7934	134 54 52.6	31.0	—0.05	059391	
7.0	.7216996	6233	.6530282	0878	.2833230	3777	135 23 38.3	16.6	0.10	059051	
7.5	.7275723	4974	.6474143	4748	.2808871	9419	135 52 24.3	2.5	0.15	058707	
8.0	.7333946	3202	.6417543	8157	.2784313	4862	136 20 70.6	48.7	0.20	058360	
8.5	.7391652	0912	.6360486	1109	.2759557	0107	136 49 57.3	35.4	0.24	058010	
9.0	—7448837	8102	+6302975	3606	+2734604	5155	137 18 44.3	22.3	—0.27	057656	
9.5	.7505496	4766	.6245014	5654	.2709456	0008	137 47 31.7	9.7	0.29	057298	
10.0	.7561624	0899	.6186606	7254	.2684114	4667	138 15 79.4	57.3	0.31	056936	
10.5	.7617217	6497	.6127755	8412	.2658580	9134	138 44 67.5	45.4	0.31	056570	
11.0	.7672271	1556	.6068465	9130	.2632856	3411	139 13 56.0	33.8	0.31	056200	
11.5	—7726781	6071	+6008739	9413	+2606944	7500	139 42 44.9	22.7	—0.30	055825	
12.0	.7780743	0039	.5948582	9264	.2580846	1402	140 11 34.2	11.9	0.28	055446	
12.5	.7834153	3454	.5887908	8689	.2554562	5119	140 40 23.9	1.5	0.26	055063	
13.0	.7887005	6312	.5826990	7689	.2528096	8654	141 8 73.9	51.4	0.23	054676	
13.5	.7939295	8608	.5765563	6270	.2501448	2007	141 37 64.3	41.8	0.20	054284	
14.0	—7991020	0339	+5703723	3438	+2474620	5179	142 6 55.1	32.5	—0.16	053886	
14.5	.8042175	1500	.5641472	2196	.2447614	8174	142 35 46.3	23.7	0.11	053483	
15.0	.8092755	2086	.5578815	9547	.2420433	0993	143 4 37.8	15.1	—0.06	053075	
15.5	.8142756	2093	.5515756	6496	.2393077	3638	143 33 29.7	7.0	0.00	052662	
16.0	.8192174	1517	.5452300	3048	.2365550	6111	144 1 82.0	59.2	+0.06	052244	
16.5	—8241004	0353	+5388452	9208	+2337853	8415	144 30 74.6	51.8	+0.12	051820	
17.0	.8289243	8599	.5324218	4982	.2309188	0550	144 59 67.6	44.7	0.18	051391	
17.5	.8336887	6249	.5259601	0373	.2281957	2520	145 28 60.9	38.0	0.24	050957	
18.0	.8383932	3301	.5194605	5384	.2253762	4325	145 57 54.6	31.6	0.31	050517	
18.5	.8430375	9751	.5129237	0024	.2225405	5968	146 26 48.6	25.6	0.37	050073	
19.0	—8476211	5593	+5063501	4206	+2196889	7452	146 55 43.0	19.9	+0.44	049623	
19.5	.8521438	0827	.4997402	8205	.2168214	8777	147 24 37.7	14.6	0.50	049168	
20.0	.8566052	5448	.4930945	1755	.2139384	9947	147 53 32.8	9.6	0.56	048708	
20.5	.8610050	9453	.4864135	4953	.2110400	0963	148 22 28.2	5.0	0.61	048243	
21.0	.8653428	2838	.4796977	7802	.2081265	1828	148 51 23.9	0.6	0.66	047774	
21.5	—8696183	5600	+4729476	0309	+2051981	2544	149 19 79.9	56.6	+0.70	047300	
22.0	.8738311	7735	.4661638	2478	.2022550	3113	149 48 76.3	52.9	0.74	046822	
22.5	.8779909	9240	.4593467	4315	.1992974	3537	150 17 73.0	49.6	0.77	046339	
23.0	.8820675	0113	.4524968	5823	.1963256	3819	150 46 70.0	46.5	0.80	045852	
23.5	.8860906	0351	.4456147	7009	.1933399	3962	151 15 67.4	43.9	0.81	045360	
24.0	—8900498	9951	+4387009	7878	+1903404	3966	151 44 65.1	41.5	+0.82	044865	
24.5	.8939449	8909	.4317550	8435	.1873273	3835	152 13 63.0	39.4	0.82	044366	
25.0	.8977755	7223	.4247802	8685	.1843008	3570	152 42 61.3	37.6	0.81	043863	
25.5	.9015415	4890	.4177744	8634	.1812612	3174	153 11 59.9	36.2	0.79	043357	
26.0	.9052425	1908	.4107339	8286	.1782087	2648	153 40 58.8	35.0	0.77	042848	
26.5	—9088785	8276	+4036743	7647	+1751435	1906	154 9 58.0	34.2	+0.74	042336	
27.0	.9124490	3989	.3965810	6721	.1720659	1220	154 38 57.6	33.7	0.70	041822	
27.5	.9159540	9047	.3894596	5514	.1689760	0321	155 7 57.6	33.7	0.66	041304	
28.0	.9193932	3447	.3823105	4030	.1658741	9301	155 36 57.9	33.9	0.62	040785	
28.5	.9227664	7187	.3751344	2276	.1627604	8164	156 5 58.6	34.6	0.57	040263	
29.0	—9260734	0265	+3679316	0255	+1596352	6912	156 34 59.6	35.5	+0.52	039740	
29.5	.9293139	2678	.3607027	7973	.1564986	5546	157 3 61.0	36.9	0.46	039215	
30.0	.9324877	4425	.3534483	5435	.1533508	4067	157 32 62.7	38.5	0.40	038688	
30.5	.9355946	5502	.3461687	2646	.1501921	2480	158 1 64.8	40.6	0.34	038159	
31.0	.9386344	5909	.3388644	9609	.1470227	0785	158 30 67.3	43.0	0.27	037629	
31.5	—9416069	5641	+3315359	6330	+1438428	8966	158 59 70.2	45.9	+0.21	037097	

SUN'S COÖRDINATES, 1868. 399

Date, 1868.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
	X.	X'.	Y.	Y'.	Z.	Z.	$\lambda = \odot$'s True Longitude.	λ'	$\delta = \odot$'s Latitude.	Log. Rad. Vect. = ρ .
Sep. 1.0	-.9445119	4701	+3241838	2815	+1406526	7083	159 28 73.5	49.1	+0.14	0.036564
1.5	.9473492	3082	3168084	9068	.1374523	5080	159 57 77.2	52.8	0.08	0.036029
2.0	.9501184	0783	3094103	5093	.1342422	2978	160 26 81.4	56.9	+0.01	0.035494
2.5	.9528194	7802	3019900	-0896	.1310225	0781	160 56 26.0	1.5	-0.05	0.034968
3.0	.9554520	4137	2945480	6482	.1277934	8489	161 25 31.0	6.4	0.11	0.034421
3.5	-.9580160	9786	+2870847	1855	+1245550	6105	161 54 36.5	11.9	-0.16	0.033883
4.0	.9605112	4747	2796006	7020	.1213077	3631	162 23 42.4	17.7	0.21	0.033343
4.5	.9629374	9018	2720962	1982	.1180516	1069	162 52 48.8	24.1	0.25	0.032802
5.0	.9652943	2596	2645720	6745	.1147869	8421	163 21 55.8	31.0	0.28	0.032260
5.5	.9675816	5478	2570285	1316	.1115139	5690	163 50 63.3	38.5	0.30	0.031716
6.0	-.9697992	7663	+2494661	5607	+1082327	2878	164 19 71.2	46.4	-0.32	0.031171
6.5	.9719469	9149	2418854	9896	.1049436	9986	164 48 79.6	54.8	0.33	0.030624
7.0	.9740244	9934	2342868	3015	.1016469	7018	165 18 28.5	3.6	0.34	0.030074
7.5	.9760316	0015	2266709	7762	.0983427	3976	165 47 37.9	13.0	0.34	0.029522
8.0	.9779682	9391	2190383	1441	.0950313	0861	166 16 47.9	22.9	0.33	0.028969
8.5	-.9798340	8059	+2113894	4957	+0917128	7675	166 45 58.4	33.4	-0.31	0.028414
9.0	.9816288	6017	2037248	8316	.0883875	4421	167 14 69.5	44.4	0.29	0.027857
9.5	.9833525	3264	1960450	1523	.0850556	1101	167 43 81.1	56.0	0.25	0.027298
10.0	.9850050	9799	1883506	4584	.0817175	7719	168 13 33.2	8.0	0.21	0.026736
10.5	.9865859	5618	1806421	7504	.0783733	4276	168 42 45.9	20.7	0.16	0.026172
11.0	-.9880951	0720	+1729201	0289	+0750234	0776	169 11 59.1	33.8	-0.11	0.025606
11.5	.9895323	5102	1651852	2945	.0716678	7219	169 40 72.8	27.5	-0.05	0.025037
12.0	.9908975	8765	1574379	5476	.0683069	3609	170 10 27.1	1.7	+0.01	0.024466
12.5	.9921904	1703	1496788	7890	.0649409	9948	170 39 41.9	16.5	0.07	0.023892
13.0	.9934108	3917	1419066	0192	.0615700	6237	171 8 57.2	31.7	0.14	0.023314
13.5	-.9945586	5405	+1341277	2388	+0581945	2491	171 37 73.0	47.5	+0.21	0.022733
14.0	.9956337	6166	1263369	4484	.0548146	8680	172 7 29.4	3.8	0.28	0.022149
14.5	.9966359	6198	1185366	6485	.0514306	4839	172 36 46.2	20.6	0.35	0.021562
15.0	.9975650	5500	1107275	8308	.0480420	0960	173 5 63.5	37.8	0.41	0.020972
15.5	.9984210	4070	1029102	0228	.0446516	7046	173 34 81.4	55.7	0.47	0.020379
16.0	-.9992038	1909	+0950852	1922	+0412570	3098	174 4 39.8	14.1	+0.53	0.019782
16.5	.9999133	9014	0872533	3667	.0378593	9120	174 33 58.7	33.0	0.59	0.019162
17.0	1.0005494	5386	0794150	5288	.0344589	5114	175 2 78.1	52.3	0.64	0.018580
17.5	1.0011120	1023	0715710	6852	.0310559	1083	175 32 37.9	12.1	0.68	0.017974
18.0	1.0016011	5924	0637219	8364	.0276507	7029	176 1 58.1	32.2	0.72	0.017366
18.5	-1.0020166	0089	+0558683	9831	+0242434	2954	176 30 78.8	52.9	+0.75	0.016756
19.0	1.0023585	3519	0480108	1259	.0208344	8862	177 0 40.0	14.0	0.78	0.016143
19.5	1.0026268	6212	0401500	2655	.0174239	4756	177 29 61.7	36.7	0.80	0.015527
20.0	1.0028213	8168	0322865	4023	.0140123	0638	177 58 83.8	57.7	0.81	0.014908
20.5	1.0029420	9386	0244209	5370	.0105997	6510	178 28 46.3	20.2	0.81	0.014287
21.0	-1.0029889	9866	+0165537	6701	+0071864	2375	178 57 69.2	43.1	+0.81	0.013665
21.5	1.0029620	9608	0086856	8023	.0037727	8236	179 27 32.6	6.5	0.80	0.013040
22.0	1.0028614	8613	+0008172	9342	+0003587	4094	179 56 56.4	30.2	0.78	0.012413
22.5	1.0026872	6881	-0070509	9336	-0030552	0047	180 25 80.7	54.5	0.75	0.011784
23.0	1.0024394	4414	0149181	8006	.0064686	4183	180 55 45.4	19.1	0.72	0.011154
23.5	-1.0021179	1210	-0227838	6660	-0098814	8313	181 24 70.6	44.3	+0.68	0.010522
24.0	1.0017228	7270	0306475	5295	.0132935	2436	181 54 36.2	9.8	0.63	0.009890
24.5	1.0012541	2594	0385085	3903	.0167045	6548	182 23 62.2	35.8	0.58	0.009257
25.0	1.0007120	7184	0463663	2479	.0201140	0645	182 53 28.6	2.1	0.53	0.008623
25.5	1.0000964	1039	0542204	1018	.0235219	4726	183 22 55.5	29.0	0.47	0.007989
26.0	-.9994075	4161	-0620701	9513	-0269279	8788	183 51 82.8	56.3	+0.41	0.007355
26.5	.9986452	6549	0699049	7850	.0303319	2830	184 21 50.6	24.1	0.34	0.006721
27.0	.9978097	8206	0777543	6351	.0337334	6848	184 50 78.8	52.2	0.27	0.006088
27.5	.9969010	9130	0855877	4683	.0371324	0840	185 20 47.4	20.8	0.20	0.005455
28.0	.9959191	9322	0934145	2950	.0405285	4803	185 49 76.5	49.8	0.13	0.004823
28.5	-.9948641	8783	-1012342	1145	-0459216	8736	186 19 46.0	19.3	+0.06	0.004091
29.0	.9937361	7515	1090462	9264	.0473113	2636	186 48 76.0	49.2	0.00	0.003560
29.5	.9925352	5517	1168501	7302	.0506975	6500	187 18 46.5	19.7	-0.06	0.002930
30.0	.9912614	2790	1246453	5253	.0540799	0327	187 47 77.5	50.6	0.11	0.002301
30.5	.9899148	9325	1324314	3113	.0574583	4114	188 17 49.0	42.1	0.16	0.001673
Oct. 1.0	-.9884955	5154	-1402078	0876	-0608324	7858	188 46 81.0	54.1	-0.21	0.001047

400 SUN'S COÖRDINATES, 1868.

Date, 1868.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.				
	X.	X'.	Y.	Y'.	Z.	Z'.	$\lambda = \odot$'s True Longitude.	λ'	$\delta = \odot$'s Latitude.	Log. Rad. Vect. = ρ	
Oct. 1.5	—9870035	0245	—1479739	8536	—0642021	1557	189 16 53.5	26.6	—0.25	000421	
2.0	9854389	4611	.1557212	6088	.0675670	5209	189 45 86.5	50.5	0.29	999797	
2.5	9838017	8250	.1634731	3526	.0709270	8812	190 15 60.1	33.1	0.32	999174	
3.0	9820921	1165	.1712051	0246	.0742818	2363	190 45 34.3	7.2	0.34	998553	
3.5	9803100	3355	.1789247	8042	.0776312	5859	191 14 69.0	41.9	0.35	997933	
4.0	—9784557	4824	—1866313	5107	—0809748	9298	191 44 44.2	17.0	—0.36	997315	
4.5	9765212	5570	.1943244	2038	.0843126	2679	192 13 80.0	52.8	0.36	996697	
5.0	9745306	5596	.2020034	8828	.0876443	5999	192 43 56.3	29.0	0.35	996081	
5.5	9724599	4900	.2096678	5472	.0909695	9254	193 13 33.2	5.9	0.33	995465	
6.0	9703171	3484	.2173168	1961	.0942880	2442	193 42 70.7	43.4	0.31	994851	
6.5	—9681024	1349	—2249502	8295	—0975997	5562	194 12 48.7	21.4	—0.28	994238	
7.0	9658158	8494	.2325671	4464	.1009042	8610	194 42 27.3	0.0	0.24	993625	
7.5	9634574	4921	.2401672	0465	.1042913	1584	195 11 66.5	39.2	0.19	993013	
8.0	9610274	0633	.2477498	7291	.1074908	4487	195 41 46.2	18.8	0.14	992402	
8.5	9585258	5629	.2553143	1936	.1107724	7301	196 10 86.6	59.2	0.09	991792	
9.0	—9559527	9910	—2628601	7394	—1140460	0041	196 40 67.5	40.0	—0.03	991182	
9.5	9523083	3477	.2703867	2660	.1173112	2696	197 10 49.0	21.5	+0.03	990572	
10.0	9505926	6332	.2778935	7729	.1205678	5265	197 40 31.1	3.5	0.09	989962	
10.5	9478059	8477	.2853799	2593	.1238155	7745	198 9 73.8	46.2	0.15	989352	
11.0	9449483	9913	.2928454	7248	.1270542	0136	198 39 57.1	29.4	0.22	988742	
11.5	—9420199	0641	—3002893	1687	—1302935	2432	199 9 41.0	13.3	+0.28	988131	
12.0	9390299	0663	.3077109	5904	.1335031	4632	199 38 85.4	57.6	0.34	987521	
12.5	9359514	9979	.3151098	9893	.1367129	6733	200 8 70.4	42.6	0.40	986910	
13.0	9328117	8594	.3224853	3649	.1399125	8733	200 38 55.9	28.1	0.45	986299	
13.5	9296019	6507	.3298369	7165	.1431019	0630	201 8 42.0	14.0	0.51	985687	
14.0	—9263223	3723	—3371638	0435	—1462804	2419	201 38 28.6	0.6	+0.56	985075	
14.5	9229730	0241	.3444656	3454	.1494482	4100	202 7 75.7	47.7	0.61	984463	
15.0	9195544	6067	.3517415	6214	.1526047	5669	202 37 63.4	35.3	0.65	983851	
15.5	9160666	1200	.3589911	8711	.1557498	7123	203 7 51.6	23.5	0.69	983238	
16.0	9125098	5644	.3662136	0937	.1588833	8462	203 37 40.3	12.1	0.72	982625	
16.5	—9088842	9399	—3734085	2887	—1620048	9680	204 7 29.5	1.3	+0.74	982011	
17.0	9051902	2471	.3805752	4556	.1651141	0777	204 36 79.3	51.0	0.76	981397	
17.5	9014281	4861	.3877131	5936	.1682109	1748	205 6 69.6	41.3	0.77	980782	
18.0	8975983	6575	.3948216	7023	.1712951	2594	205 36 60.3	31.9	0.77	980167	
18.5	8937007	7610	.4019002	7810	.1743663	3310	206 6 51.4	23.0	0.76	979552	
19.0	—8897360	7975	—4089483	8293	—1774243	3894	206 36 43.0	14.5	+0.74	978938	
19.5	8857042	7669	.4159653	8465	.1804689	4343	207 6 35.0	6.5	0.71	978324	
20.0	8816059	6698	.4229507	8321	.1834997	4655	207 35 87.4	58.8	0.68	977710	
20.5	8774412	5062	.4299039	7855	.1865166	4928	208 5 80.3	51.4	0.64	977097	
21.0	8732105	2767	.4368244	7062	.1895193	4859	208 35 73.6	44.9	0.60	976484	
21.5	—8689142	9815	—4437116	5936	—1925077	4747	209 5 67.4	38.7	+0.55	975873	
22.0	8645526	6211	.4505651	4474	.1954814	4488	209 35 61.6	32.8	0.50	975262	
22.5	8601260	1956	.4573843	2668	.1984403	4081	210 5 56.2	27.4	0.44	974653	
23.0	8556347	7055	.4641687	0515	.2013842	3524	210 35 51.3	22.4	0.38	974045	
23.5	8510793	1512	.4709179	8010	.2043128	2814	211 5 46.8	17.9	0.32	973439	
24.0	—8464601	5332	—4776312	5146	—2072259	1949	211 35 42.7	13.7	+0.25	972836	
24.5	8417774	8516	.4843084	1921	.2101232	0926	212 5 39.0	10.0	0.19	972235	
25.0	8370315	1070	.4909488	8328	.2130046	9745	212 35 35.7	6.6	0.12	971637	
25.5	8322228	2994	.4975521	4364	.2158699	8402	213 5 32.9	3.7	+0.06	971041	
26.0	8273515	4294	.5041175	0021	.2187187	6895	213 35 30.4	1.1	—0.01	970447	
26.5	—8224181	4972	—5106449	5298	—2215510	5212	214 4 88.4	59.1	—0.07	969856	
27.0	8174230	5033	.5171334	0187	.2243664	3381	214 34 86.8	57.4	0.13	969268	
27.5	8123664	4478	.5235829	4686	.2271649	1370	215 4 85.6	56.2	0.19	968683	
28.0	8072489	3316	.5299927	8787	.2299461	9187	215 34 84.9	55.4	0.24	968102	
28.5	8020707	1545	.5363626	2490	.2327100	6830	216 4 84.7	55.2	0.28	967525	
29.0	—7968323	9173	—5426919	5787	—2354562	4297	216 34 84.9	55.3	—0.32	966952	
29.5	7915340	6201	.5489803	8675	.2381846	1585	217 4 85.5	55.9	0.35	966382	
30.0	7861761	2634	.5552273	1149	.2408950	8694	217 34 86.5	56.8	0.38	965816	
30.5	7807591	8475	.5614324	3204	.2435872	5620	218 4 88.0	58.2	0.39	965254	
31.0	7752832	3728	.5675952	4836	.2462610	2363	218 35 30.0	0.1	0.40	964696	
31.5	—7697489	8396	—5737152	6040	—2489163	8920	219 5 32.4	2.5	—0.40	964142	

© The first figures of this and the following logarithms are 9.9.

SUN'S COÖRDINATES, 1868. 401

Date, 1868.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.				
	X.	X'.	Y.	Y'.	Z.	Z'.	$\lambda = \odot$'s True Longitude.	λ'	$\delta = \odot$'s Latitude.	Log. Rad. Vect. = ρ .	ρ
Nov. 1.0	—7641565	2484	—5797920	6813	—2515528	5290	219 35 35.2	5.2	—0.39	963592	9.9
1.5	7585064	5994	5858252	7149	2541703	1470	220 5 38.5	8.5	0.37	963046	
2.0	7527990	8931	5918142	7044	2567686	7458	220 35 42.3	12.2	0.35	962504	
2.5	7470346	1298	5977587	6494	2593476	3252	221 5 46.7	16.6	0.32	961966	
3.0	7412134	3098	6036581	5493	2619070	8851	221 35 51.6	21.4	0.29	961432	
3.5	—7353360	4335	—6085122	4039	—2644467	4253	222 5 56.9	26.7	—0.25	960902	
4.0	7294026	5012	6153202	2124	2669664	9455	222 35 62.8	32.5	0.21	960376	
4.5	7234136	5133	6210820	9747	2694659	4454	223 5 60.2	38.8	0.16	959853	
5.0	7173685	4704	6267168	6900	2719450	9250	223 35 76.1	45.6	0.11	959334	
5.5	7112705	3725	6324644	3581	2744036	3841	224 5 83.5	53.0	—0.05	958818	
6.0	—7051172	2203	—6380842	3785	—2768415	8225	224 36 31.4	0.8	+0.01	958306	
6.5	6989099	9141	6436558	5506	2792585	2400	225 6 39.9	9.3	0.07	957798	
7.0	6926491	7545	6491786	0740	2816542	6361	225 36 48.9	18.2	0.14	957293	
7.5	6863332	4417	6546323	5453	2840286	0110	226 6 58.3	27.6	0.20	956790	
8.0	6799688	3674	6600763	9730	2863814	3643	226 36 68.2	37.4	0.27	956291	
8.5	—6735501	6588	—6654500	3478	—2887125	6059	227 6 78.7	47.9	+0.33	955795	
9.0	6670799	1397	6707729	6707	2910216	0055	227 36 89.7	58.8	0.39	955301	
9.5	6605553	6692	6760449	9433	2933086	2931	228 7 41.2	10.2	0.45	954809	
10.0	6539860	9080	6812654	1644	2955733	5583	228 37 53.1	22.0	0.50	954320	
10.5	6473633	4764	6864339	3335	2978155	8011	229 7 65.4	34.3	0.55	953834	
11.0	—6406908	8850	—6915497	4580	—3000349	0210	229 37 78.1	46.9	+0.59	953350	
11.5	6339689	9842	6966128	5137	3022213	2179	230 8 31.4	0.2	0.63	952868	
12.0	6271928	3146	7016224	5240	3044045	3916	230 38 45.1	13.8	0.66	952389	
12.5	6203791	4966	7065782	4805	3065545	5421	231 8 59.3	28.0	0.69	951912	
13.0	6135122	6307	7114797	3837	3086811	6692	231 38 73.9	42.5	0.71	951437	
13.5	—6065980	7176	—7163265	2302	—3107840	7727	232 8 88.9	57.4	+0.72	950964	
14.0	5996370	7576	7211181	0225	3128630	8522	232 39 44.3	12.7	0.72	950493	
14.5	5926297	7514	7258543	4594	3149179	9077	233 9 60.2	28.5	0.71	950024	
15.0	5855768	6995	7305346	4404	3169486	9389	233 39 76.4	44.6	0.70	949557	
15.5	5784793	6096	7351586	0651	3189549	9457	234 10 33.0	1.2	0.67	949093	
16.0	—5713364	4612	—7397260	6333	—3209366	9280	234 40 50.0	18.1	+0.64	948631	
16.5	5641592	2761	7442363	1443	3228935	8855	235 10 67.3	35.4	0.60	948171	
17.0	5569207	9476	7486893	5981	3248256	8181	235 40 85.0	53.0	0.56	947714	
17.5	5496426	7765	7530844	9940	3267327	7258	236 10 43.0	11.0	0.52	947260	
18.0	5423344	4633	7574214	3318	3286145	6082	236 41 61.3	29.2	0.47	946809	
18.5	—5349787	1086	—7616999	6110	—3304710	4652	237 11 79.9	47.7	+0.41	946359	
19.0	5275820	7129	7659196	8315	3323020	2968	237 42 38.8	6.5	0.35	945913	
19.5	5201450	2769	7700801	9928	3341073	1027	238 12 58.0	25.8	0.29	945471	
20.0	5126682	8010	7741812	0948	3358868	8828	238 42 77.5	45.0	0.22	945033	
20.5	5051523	1861	7782225	1368	3376404	6369	239 13 37.3	4.8	0.16	944598	
21.0	—4975979	7226	—7822037	1190	—3393680	3651	239 43 57.4	24.8	0.09	944167	
21.5	4900055	1412	7861244	0405	3410694	0671	240 13 77.7	45.1	+0.03	943740	
22.0	4823757	5123	7899844	9014	3427444	7427	240 44 36.3	5.6	—0.04	943317	
22.5	4747091	3467	7937835	7014	3443929	3917	241 14 59.2	26.5	0.10	942898	
23.0	4670064	1449	7975214	4402	3460149	0143	241 44 80.4	47.6	0.17	942484	
23.5	—4598681	4075	—8011977	1174	—3476103	6103	242 15 41.8	9.0	—0.23	942075	
24.0	4514948	6351	8048122	7322	3491789	1795	242 45 63.6	30.6	0.29	941670	
24.5	4436872	8284	8086348	2863	3507205	7217	243 15 85.6	52.5	0.34	941270	
25.0	4358459	9880	8118552	7776	3522351	2369	243 46 47.8	14.6	0.38	940876	
25.5	4279713	1143	8152832	2065	3537226	7250	244 16 70.3	37.1	0.41	940487	
26.0	—4200642	2081	—8186184	5727	—3551828	1858	244 46 93.0	59.7	—0.44	940104	
26.5	4121250	2698	8219508	8760	3566156	6192	245 17 56.0	22.7	0.46	939727	
27.0	4041543	3000	8251900	1161	3580209	0251	245 47 79.3	45.9	0.47	939355	
27.5	3961527	2993	8283659	2930	3593987	4035	246 18 42.9	9.4	0.48	938989	
28.0	3881208	2693	8314782	4064	3607490	7544	246 48 66.8	33.2	0.48	938630	
28.5	—3800592	2076	—8345266	4558	—3620715	0775	247 18 91.0	57.3	—0.47	938277	
29.0	3719684	1177	8375109	4411	3633662	3728	247 49 55.4	21.6	0.46	937930	
29.5	3638491	9993	8404310	3622	3646329	6401	248 19 80.1	46.2	0.44	937589	
30.0	3557018	8528	8432965	2188	3658717	8795	248 50 45.1	11.1	0.41	937254	
30.5	3475271	6790	8460773	0106	3670824	0908	249 20 70.4	36.4	0.37	936926	
Dec. 1.0	—3393356	4783	—8488030	7374	—3682648	2738	249 51 36.0	1.9	—0.33	936604	

402 SUN'S COÖRDINATES, 1868.

Date, 1868.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.				
	X.	X'.	Y.	Y'.	Z.	Z'.	$\lambda = \odot$'s True Longitude.	λ'	$\delta = \odot$'s Latitude.	Log. Rad. Vect. = ρ .	
Dec. 1.5	—3310978	2513	—8514635	3990	—3694188	4284	250 21 61.9	27.8	—0.28	936288	
2.0	—3228444	9987	8540585	9951	—3705443	5545	250 51 88.1	53.9	0.23	935978	
2.5	—3145659	7210	8565878	5255	—3716414	6522	251 22 54.6	20.3	0.17	935674	
3.0	—3062629	4188	8590511	9899	—3727099	7213	251 52 81.4	47.0	0.11	935376	
3.5	—2979360	9927	8614483	3882	—3737498	7618	252 23 48.5	14.0	—0.05	935084	
4.0	—2895857	7432	—8637791	7202	—3747608	7734	252 53 76.0	41.4	+0.02	934798	
4.5	—2812127	3710	8660434	9856	—3757428	7560	253 24 43.8	9.1	0.08	934517	
5.0	—2728176	9767	8682408	1842	—3766958	7096	253 54 71.9	37.1	0.15	934242	
5.5	—2644010	5609	8703713	3159	—3776198	6342	254 25 40.3	5.5	0.21	933973	
6.0	—2559637	1243	8724346	3804	—3785146	5297	254 55 69.0	34.1	0.27	933709	
6.5	—2475061	6675	—8744304	3774	—3793802	3959	255 26 37.9	3.0	+0.33	933449	
7.0	—2390291	1912	8763585	3067	—3802165	2328	255 56 67.2	32.2	0.38	933195	
7.5	—2305330	6958	8782189	1683	—3810234	0403	256 27 36.7	1.6	0.43	932946	
8.0	—2220188	1823	8800112	9619	—3818008	8183	256 57 66.6	31.4	0.47	932702	
8.5	—2134870	6512	8817352	6871	—3825485	5666	257 28 36.8	1.5	0.51	932463	
9.0	—2049382	1031	—8833908	3440	—3832665	2852	257 58 67.3	31.9	+0.54	932228	
9.5	—1963731	5387	8849777	9321	—3839548	9741	258 29 38.0	2.5	0.57	931997	
10.0	—1877925	9588	8864958	4515	—3846133	6333	258 59 68.9	33.3	0.59	931770	
10.5	—1791969	3639	8879450	9019	—3852418	2624	259 30 40.1	4.5	0.60	931548	
11.0	—1705871	7547	8893250	2832	—3858404	8616	260 0 71.6	35.9	0.61	931330	
11.5	—1619638	1321	—8906357	5952	—3864091	4309	260 31 43.4	7.6	+0.61	931115	
12.0	—1533278	4967	8918770	8378	—3869476	9701	261 1 75.4	39.5	0.60	930905	
12.5	—1446796	8491	8930487	0108	—3874561	4792	261 32 47.5	11.5	0.58	930699	
13.0	—1360200	1901	8941507	1142	—3879344	9581	262 2 79.8	43.7	0.55	930496	
13.5	—1273497	5204	8951829	1478	—3883825	4068	262 33 52.3	16.1	0.52	930297	
14.0	—1186693	8406	—8961452	1115	—3888003	8253	263 3 85.0	48.7	+0.48	930103	
14.5	—1099796	1515	8970376	0052	—3891878	2134	263 34 57.8	21.4	0.43	929912	
15.0	—1012814	4538	8978599	8289	—3895449	5711	264 4 90.8	54.3	0.38	929725	
15.5	—925753	7483	8986122	5826	—3898715	8983	264 35 63.9	27.4	0.32	929542	
16.0	—838622	9357	8992943	2661	—3901677	1952	265 6 37.2	0.6	0.26	929363	
16.5	—751427	3167	—8999062	8794	—3904335	4616	265 36 70.7	34.1	+0.19	929188	
17.0	—6664176	5921	9004480	4226	—3906689	6976	266 7 44.2	7.5	0.12	929017	
17.5	—576875	8625	9009195	8955	—3908738	9031	266 37 77.7	40.9	+0.05	928851	
18.0	—489531	1286	9013207	2982	—3910482	0782	267 8 51.3	14.4	—0.02	928689	
18.5	—402154	3914	9016515	6304	—3911921	2227	267 38 85.0	48.0	0.09	928532	
19.0	—314751	6515	—9019119	8923	—3913055	3367	268 9 58.7	21.6	—0.16	928379	
19.5	—227325	9097	9021021	0840	—3913884	4202	268 39 92.5	55.3	0.22	928223	
20.0	—139891	1664	9022220	2054	—3914407	4732	269 10 66.3	29.0	0.28	928088	
20.5	—52446	4223	9022717	2566	—3914626	4957	269 41 40.2	2.9	0.34	927951	
21.0	+0034998	3217	9022511	2374	—3914540	4877	270 11 74.1	36.7	0.40	927819	
21.5	+0122435	0650	—9021603	1481	—3914149	4492	270 42 48.0	10.5	—0.45	927692	
22.0	0209859	8069	9019995	9888	—3913454	3804	271 12 81.9	44.3	0.49	927570	
22.5	0297264	5470	9017686	7504	—3912455	2811	271 43 55.8	18.1	0.53	927454	
23.0	0384642	2844	9014677	4599	—3911151	1513	272 13 89.8	52.0	0.56	927344	
23.5	0471986	0184	9010968	0905	—3909543	9911	272 44 63.8	25.9	0.58	927241	
24.0	+0559290	7485	—9006561	6513	—3907632	8007	273 14 67.7	29.7	—0.60	927144	
24.5	0646547	4738	9001455	1422	—3905417	5798	273 45 71.7	33.6	0.61	927054	
25.0	0733750	1938	8995652	5634	—3902899	3286	274 16 45.7	7.5	0.61	926970	
25.5	0820894	9079	8989152	9149	—3900078	0471	274 46 79.7	41.5	0.60	926893	
26.0	0907973	6155	8981955	1967	—3896955	7354	275 17 53.7	15.4	0.59	926822	
26.5	+0994980	3159	—8974063	4090	—3893530	3935	275 47 87.7	49.4	—0.57	926758	
27.0	1081907	0083	8965476	5518	—3889804	0215	276 18 61.8	23.4	0.54	926702	
27.5	1168750	6923	8956195	6252	—3885776	6193	276 48 95.9	57.4	0.50	926653	
28.0	1255501	3672	8946220	6292	—3881446	1870	277 19 70.0	31.4	0.47	926610	
28.5	1342155	0324	8935553	5640	—3876815	7245	277 50 44.1	5.4	0.42	926575	
29.0	+1428703	6871	—8924194	4296	—3871884	2320	278 20 78.2	39.4	—0.37	926547	
29.5	1515143	3308	8912144	2261	—3866654	7096	278 51 52.4	13.5	0.32	926526	
30.0	1601465	9629	8899404	9535	—3861124	1572	279 21 86.6	47.6	0.26	926512	
30.5	1687665	5828	8885975	6121	—3855294	5748	279 52 60.9	21.9	0.20	926506	
31.0	1773735	1897	8871858	2018	—3849165	9625	280 22 95.1	56.0	0.14	926507	
31.5	1859670	7831	8857054	7229	—3842738	3204	280 53 69.5	30.3	0.07	926514	
32.0	+1945463	3623	—8841563	1752	—3836015	6488	281 24 43.8	4.5	—0.01	926527	

HELIOCENTRIC COÖRDINATES. 403

MERCURY.

Days from Epoch.	x .	y .	z .	Log Radius Vector.	Longitude in Orbit.	$-\frac{x^2}{r^3}x$.	$-\frac{y^2}{r^3}y$.	$-\frac{z^2}{r^3}z$.
3330	-0.2902	-0.3515	-0.0037	9.6588	230 29.3	+2.98	+ 3.61	+0.04
3335	0.1999	0.4190	0.0175	9.6671	244 37.2	1.94	4.07	0.17
3340	-0.0948	0.4557	0.0299	9.6699	258 25.9	+0.91	4.37	0.29
3345	+0.0171	0.4593	0.0403	9.6641	272 20.2	-0.17	4.55	0.40
3350	0.1275	0.4284	0.0475	9.6528	286 46.0	1.37	4.59	0.51
3355	0.2277	0.3627	0.0509	9.6348	302 12.4	2.76	4.40	0.62
3360	0.3066	0.2639	0.0496	9.6101	319 14.9	4.41	3.80	0.71
3365	0.3517	-0.1367	0.0429	9.5795	338 36.9	6.25	+ 2.43	0.76
3370	0.3495	+0.0083	0.0305	9.5453	1 8.0	7.86	- 0.19	0.69
3375	0.2884	0.1508	-0.0131	9.5129	27 27.6	8.12	4.25	+0.37
3380	0.1675	0.2609	+0.0071	9.4915	57 22.0	5.47	8.52	-0.23
3385	+0.0068	0.3079	0.0254	9.4900	88 57.3	-0.22	10.15	0.83
3390	-0.1561	0.2802	0.0376	9.5091	119 14.2	+4.51	8.09	1.09
3395	0.2864	0.1920	0.0418	9.5407	146 5.3	6.66	4.46	0.97
3400	0.3674	+0.0695	0.0386	9.5751	169 5.5	6.73	- 1.27	0.71
3405	0.3978	-0.0633	0.0302	9.6063	188 50.0	5.88	+ 0.94	0.44
3410	0.3838	0.1805	0.0183	9.6318	206 8.5	4.75	2.34	0.23
3415	0.3340	0.2982	+0.0047	9.6507	221 45.6	3.63	3.24	-0.05
3420	0.2558	0.3825	-0.0094	9.6630	236 17.8	2.56	3.82	+0.09
3425	0.1585	0.4379	0.0228	9.6686	250 14.8	1.52	4.21	0.22
3430	-0.0499	0.4613	0.0345	9.6677	264 2.6	+0.48	4.46	0.33
3435	+0.0627	0.4510	0.0436	9.6603	278 6.5	-0.64	4.59	0.44
3440	0.1701	0.4059	0.0494	9.6463	292 53.1	1.91	4.55	0.55
3445	0.2629	0.3264	0.0510	9.6255	308 53.9	3.40	4.22	0.66
3450	0.3297	0.2152	0.0476	9.5983	326 47.3	5.15	3.36	0.74
3455	0.3573	-0.0790	0.0386	9.5659	347 20.1	6.97	+ 1.55	0.75
3460	0.3322	+0.0680	0.0239	9.5315	11 21.0	8.23	- 1.68	0.59
3465	0.2460	0.2013	-0.0050	9.5023	39 14.5	7.45	6.10	+0.15
3470	+0.1050	0.2888	+0.0149	9.4682	70 9.5	-3.51	9.64	-0.50
3475	-0.0614	0.3054	0.0312	9.4956	101 34.3	+1.95	9.69	0.99
3480	0.2143	0.2502	0.0402	9.5210	130 36.9	5.70	6.66	1.07
3485	0.3256	0.1448	0.0413	9.5547	155 52.5	6.86	3.05	0.87
3490	0.3856	+0.0156	0.0357	9.5883	177 27.4	6.44	- 0.26	0.60
3495	0.3970	-0.1161	0.0257	9.6174	196 6.7	5.43	+ 1.59	0.35
3500	0.3672	0.2363	+0.0128	9.6403	212 39.1	4.28	2.76	-0.15
3505	0.3048	0.3357	-0.0011	9.6565	227 45.9	3.18	3.50	+0.02
3510	0.2182	0.4086	0.0150	9.6660	242 0.5	2.13	3.99	0.15
3515	0.1153	0.4514	0.0278	9.6690	255 50.7	1.11	4.32	0.27
3520	-0.0041	0.4613	0.0385	9.6655	269 42.0	+0.04	4.52	0.37
3525	+0.1074	0.4369	0.0464	9.6554	283 59.8	-1.13	4.60	0.49
3530	0.2101	0.3777	0.0506	9.6386	299 12.4	2.48	4.46	0.60
3535	0.2938	0.2848	0.0503	9.6152	315 53.8	4.08	3.96	0.70
3540	0.3464	0.1623	0.0446	9.5857	334 45.9	5.90	2.76	0.76
3545	0.3542	-0.0195	0.0333	9.5518	356 37.8	7.62	+ 0.43	0.72
3550	0.3047	+0.1254	-0.0166	9.5185	22 13.1	8.26	- 3.40	+0.45
3555	0.1942	0.2442	+0.0033	9.4942	51 32.4	6.22	7.83	-0.10
3560	+0.0384	0.3048	0.0223	9.4885	83 1.9	-1.28	10.16	0.74
3565	-0.1272	0.2908	0.0358	9.5043	113 46.2	+3.80	8.69	1.07
3570	0.2654	0.2120	0.0416	9.5343	141 20.7	6.44	5.15	1.01
3575	0.3560	+0.0941	0.0397	9.5687	165 2.6	6.81	- 1.80	0.76
3580	0.3958	-0.0385	0.0321	9.6008	185 20.1	6.07	+ 0.59	0.49
3585	-0.3894	-0.1669	+0.0207	9.6275	203 2.4	+4.97	+ 2.12	-0.26

NOTE. — The Epoch is the 2400,000th day of the Julian Period = 1858, November 16.

404 HELIOCENTRIC COÖRDINATES.

MERCURY.								
Days from Epoch.	x .	y .	z .	Log Radius Vector.	Longitude in Orbit.	$-\frac{x^2}{r^3}x$.	$-\frac{x^2}{r^3}y$.	$-\frac{x^2}{r^3}z$.
3590	-0.3453	-0.2796	+0.0073	9.6477	218 55.6	+3.83	+3.10	-0.08
3595	0.2720	0.3688	-0.0068	9.6612	233 37.5	2.75	3.72	+0.06
3600	0.1779	0.4297	0.0204	9.6680	247 39.1	1.71	4.12	0.18
3605	-0.0707	0.4595	0.0325	9.6684	261 26.7	+0.68	4.42	0.31
3610	+0.0416	0.4555	0.0421	9.6622	275 25.6	-0.42	4.57	0.42
3615	0.1507	0.4170	0.0486	9.6494	290 2.0	1.66	4.57	0.54
3620	0.2470	0.3439	0.0511	9.6299	305 46.2	3.10	4.32	0.64
3625	0.3198	0.2383	0.0486	9.6039	323 15.1	4.80	3.58	0.73
3630	0.3558	-0.1060	0.0407	9.5722	343 14.1	6.65	+1.96	0.76
3635	0.3415	+0.0405	0.0271	9.5378	6 32.7	8.10	-0.96	0.64
3640	0.2668	0.1787	-0.0088	9.5069	33 43.3	7.83	5.25	+0.26
3645	+0.1346	0.2773	+0.0114	9.4892	64 13.1	-4.47	9.20	-0.38
3650	-0.0300	0.3081	0.0286	9.4926	95 46.6	+0.98	9.96	0.93
3655	0.1882	0.2653	0.0392	9.5153	125 25.8	5.21	7.35	1.09
3660	0.3085	0.1672	0.0417	9.5482	151 25.6	6.80	3.69	0.92
3665	0.3782	+0.0407	0.0372	9.5823	173 39.0	6.60	-0.71	0.65
3670	0.3982	-0.0918	0.0278	9.6124	192 47.4	5.64	+1.30	0.39
3675	0.3756	0.2150	0.0154	9.6365	209 40.3	4.50	2.58	0.19
3680	0.3186	0.3190	+0.0015	9.6540	225 0.4	3.39	3.39	-0.01
3685	0.2359	0.3972	-0.0124	9.6648	239 22.6	2.32	3.91	+0.12
3690	0.1354	0.4458	0.0255	9.6690	253 15.4	1.30	4.27	0.24
3695	-0.0253	0.4620	0.0367	9.6667	267 4.6	+0.25	4.50	0.36
3700	+0.0869	-0.4441	-0.0452	9.6578	281 15.4	-0.90	+4.60	+0.47
VENUS.								
Days from Epoch.	x .	y .	z .	Log Radius Vector.	Longitude in Orbit.	$-\frac{x^2}{r^3}x$.	$-\frac{x^2}{r^3}y$.	$-\frac{x^2}{r^3}z$.
3330	+0.6498	-0.3251	-0.0421	9.8620	333 18.7	-20.46	+10.94	+1.33
3335	0.6981	0.2323	0.0430	9.8618	341 13.6	21.65	7.34	1.36
3340	0.7132	0.1350	0.0429	9.8616	349 9.0	22.52	4.26	1.36
3345	0.7246	-0.0351	0.0421	9.8613	357 4.9	22.93	+ 1.11	1.33
3350	0.7220	+0.0655	0.0404	9.8610	5 1.5	22.99	- 2.08	1.27
3355	0.7055	0.1648	0.0380	9.8606	12 58.9	22.43	5.24	1.20
3360	0.6754	0.2610	0.0348	9.8603	20 57.1	21.52	8.32	1.11
3365	0.6321	0.3520	0.0310	9.8599	28 56.1	20.21	11.26	0.99
3370	0.5766	0.4363	0.0266	9.8594	36 56.0	18.49	13.96	0.85
3375	0.5098	0.5120	0.0216	9.8590	44 56.9	16.39	16.46	0.69
3380	0.4331	0.5777	0.0162	9.8586	52 58.6	13.96	18.63	0.52
3385	0.3478	0.6320	0.0105	9.8582	61 1.3	11.24	20.43	0.34
3390	0.2557	0.6740	-0.0046	9.8579	69 4.8	8.29	21.83	+0.15
3395	0.1586	0.7026	+0.0014	9.8575	77 9.1	5.15	22.82	-0.05
3400	+0.0583	0.7174	0.0074	9.8572	85 14.2	- 1.90	23.35	0.24
3405	-0.0431	0.7179	0.0132	9.8569	93 19.9	+ 1.40	23.42	0.43
3410	0.1436	0.7042	0.0188	9.8567	101 26.1	4.69	23.00	0.61
3415	0.2413	0.6765	0.0240	9.8565	109 32.8	7.89	22.13	0.78
3420	0.3342	0.6354	0.0287	9.8564	117 39.8	10.94	20.80	0.94
3425	0.4205	0.5815	0.0328	9.8564	125 47.0	13.76	19.04	1.07
3430	0.4983	0.5162	0.0363	9.8564	133 54.3	16.31	16.90	1.19
3435	0.5662	0.4405	0.0391	9.8564	142 1.4	18.54	14.42	1.28
3440	-0.6229	-0.3561	+0.0411	9.8566	150 8.4	+20.39	-11.66	-1.34

NOTE. — The Epoch is the 2400,000th day of the Julian Period = 1858, November 16.

HELIOCENTRIC COÖRDINATES. 405

VENUS.								
Days from Epoch.	x .	y .	z .	Log. Radius Vector.	Longitude in Orbit.	$-\frac{x^2}{r^3}x$.	$-\frac{x^2}{r^3}y$.	$-\frac{x^2}{r^3}z$.
3445	-0.6672	+0.2646	+0.0422	9.8567	158 15.0	+21.80	- 8.64	-1.38
3450	0.6982	0.1678	0.0496	9.8570	166 21.3	22.76	5.47	1.39
3455	0.7154	+0.0677	0.0421	9.8572	174 26.9	23.29	- 2.20	1.37
3460	0.7184	-0.0338	0.0407	9.8576	182 31.9	23.34	+ 1.10	1.32
3465	0.7072	0.1346	0.0386	9.8579	190 36.1	22.91	4.36	1.25
3470	0.6821	0.2327	0.0356	9.8583	198 39.6	22.04	7.52	1.15
3475	0.6435	0.3263	0.0320	9.8587	206 42.1	20.74	10.50	1.03
3480	0.5923	0.4134	0.0278	9.8591	214 43.8	19.03	13.28	0.89
3485	0.5296	0.4925	0.0230	9.8595	222 44.6	16.97	15.78	0.74
3490	0.4555	0.5620	0.0178	9.8599	230 44.4	14.59	17.95	0.57
3495	0.3746	0.6205	0.0122	9.8603	238 43.4	11.93	19.77	0.39
3500	0.2851	0.6671	0.0063	9.8607	246 41.5	9.06	21.20	0.20
3505	0.1906	0.7007	+0.0004	9.8610	254 38.7	6.05	22.22	-0.01
3510	-0.0922	0.7208	-0.0065	9.8613	262 35.3	+ 2.92	22.81	+0.17
3515	+0.0079	0.7270	0.0113	9.8616	270 31.2	- 0.25	22.96	0.36
3520	0.1080	0.7193	0.0170	9.8619	278 26.9	3.40	22.67	0.53
3525	0.2060	0.6978	0.0223	9.8620	286 21.3	6.49	21.97	0.70
3530	0.3000	0.6629	0.0271	9.8622	294 15.9	9.44	20.85	0.85
3535	0.3883	0.6153	0.0315	9.8623	302 10.1	12.20	19.34	0.99
3540	0.4691	0.5559	0.0352	9.8623	310 4.3	14.74	17.47	1.10
3545	0.5410	0.4860	0.0383	9.8623	317 58.4	17.00	15.27	1.20
3550	0.6025	0.4067	0.0407	9.8622	325 52.7	18.94	12.79	1.28
3555	0.6525	0.3196	0.0422	9.8620	333 47.2	20.55	10.06	1.33
3560	0.6900	0.2264	0.0430	9.8618	341 42.1	21.76	7.14	1.36
3565	0.7143	0.1289	0.0429	9.8616	349 37.5	22.56	4.07	1.36
3570	0.7248	-0.0289	0.0420	9.8613	357 33.5	22.91	+ 0.91	1.33
3575	0.7214	+0.0716	0.0403	9.8610	5 30.1	22.88	- 2.27	1.28
3580	0.7041	0.1706	0.0378	9.8606	13 27.5	22.39	5.43	1.20
3585	0.6731	0.2667	0.0346	9.8603	21 25.6	21.46	8.50	1.11
3590	0.6291	0.3573	0.0307	9.8598	29 24.7	20.11	11.42	0.98
3595	0.5729	0.4411	0.0263	9.8594	37 24.6	18.37	14.14	0.84
3600	0.5055	0.5163	0.0213	9.8590	45 25.5	16.25	16.60	0.64
3605	0.4292	0.5813	0.0159	9.8586	53 27.3	13.81	18.74	0.51
3610	0.3425	0.6349	0.0101	9.8582	61 29.9	11.08	20.53	0.33
3615	0.2500	0.6761	-0.0042	9.8579	69 33.4	8.10	21.92	+0.14
3620	0.1527	0.7039	+0.0018	9.8573	77 37.8	4.95	22.87	-0.06
3625	+0.0523	0.7178	0.0078	9.8572	85 42.8	- 1.70	23.37	0.25
3630	-0.0491	0.7175	0.0136	9.8570	93 48.5	+ 1.60	23.40	0.49
3635	0.1498	0.7030	0.0192	9.8567	101 54.8	4.89	22.96	0.62
3640	0.2470	0.6745	0.0243	9.8565	110 1.5	8.09	22.06	0.79
3645	0.3396	0.6325	0.0290	9.8564	118 8.5	11.11	20.71	0.95
3650	0.4254	0.5790	0.0331	9.8564	126 15.7	13.92	18.92	1.08
3655	0.5027	0.5119	0.0365	9.8564	134 23.0	16.46	16.76	1.19
3660	0.5700	0.4358	0.0392	9.8564	142 30.2	18.66	14.26	1.28
3665	0.6259	0.3508	0.0412	9.8566	150 37.1	20.47	11.47	1.35
3670	0.6694	0.2589	0.0423	9.8567	158 43.8	21.86	8.46	1.38
3675	0.6996	0.1618	0.0426	9.8570	166 50.0	22.81	5.22	1.39
3680	0.7160	+0.0616	0.0420	9.8572	174 55.6	23.31	- 2.00	1.32
3685	0.7181	-0.0399	0.0406	9.8575	183 0.6	23.33	+ 1.20	1.32
3690	0.7060	0.1406	0.0384	9.8579	191 4.9	22.87	4.56	1.24
3695	+0.6801	-0.2385	+0.0354	9.8583	199 8.3	+21.97	+ 7.71	-1.14

Note. — The Epoch is the 2400,000th day of the Julian Period = 1858, November 18.

406 HELIOCENTRIC CÖÖRDINATES.

THE EARTH.								
Days from Epoch.	x .	y .	z .	Log Radius Vector.	Longitude in Orbit.	$-\frac{x^2}{r^2}$.	$-\frac{y^2}{r^2}$.	$-\frac{z^2}{r^2}$.
3330	-0.1276	+0.9750	0.0000	9.9927	97 27.4	+ 1.79	-13.68	0.00
3340	0.2981	0.9371		9.9927	107 39.0	4.18	13.15	
3350	0.4594	0.8702		9.9930	117 50.1	6.43	12.19	
3360	0.6066	0.7763		9.9935	128 0.2	8.46	10.83	
3370	0.7349	0.6584		9.9942	138 8.7	10.23	9.15	
3380	0.8406	0.5203		9.9950	148 15.1	11.61	7.18	
3390	0.9207	0.3662		9.9960	158 18.8	12.64	5.02	
3400	0.9728	0.2011		9.9971	168 19.4	13.24	2.74	
3410	0.9956	+0.0299		9.9983	178 16.9	13.44	- 0.40	
3420	0.9890	-0.1422		9.9996	188 11.1	13.23	+ 1.90	
3430	0.9528	0.3101		0.0008	198 1.9	12.64	4.11	
3440	0.8886	0.4689		0.0020	207 49.3	11.69	6.17	
3450	0.7986	0.6141		0.0032	217 33.5	10.42	8.01	
3460	0.6855	0.7415		0.0042	227 14.8	8.88	9.61	
3470	0.5528	0.8477		0.0052	236 53.5	7.12	10.91	
3480	0.4044	0.9298		0.0060	246 29.8	5.18	11.90	
3490	0.2444	0.9856		0.0066	256 4.1	3.12	12.56	
3500	-0.0776	1.0132		0.0070	265 37.1	+0.99	12.88	
3510	+0.0914	1.0125		0.0072	275 9.4	-1.16	12.85	
3520	0.2578	0.9836		0.0072	284 41.3	3.27	12.48	
3530	0.4170	0.9268		0.0070	294 13.5	5.30	11.78	
3540	0.5646	0.8440		0.0066	303 46.6	7.20	10.76	
3550	0.6960	0.7374		0.0060	313 20.7	8.91	9.44	
3560	0.8078	0.6100		0.0053	322 56.7	10.39	7.84	
3570	0.8967	0.4652		0.0044	332 35.0	11.61	6.02	
3580	0.9599	0.3070		0.0033	342 15.9	12.52	4.00	
3590	0.9952	-0.1400		0.0022	351 59.7	13.08	+ 1.84	
3600	1.0016	+0.0311		0.0010	1 46.6	13.28	- 0.41	
3610	0.9788	0.2011		9.9997	11 36.7	13.09	2.69	
3620	0.9273	0.3653		9.9985	21 30.4	12.50	4.92	
3630	0.8478	0.5187		9.9973	31 27.5	11.53	7.05	
3640	0.7427	0.6563		9.9961	41 27.8	10.18	9.00	
3650	0.6153	0.7741		9.9951	51 31.1	8.49	10.68	
3660	0.4690	0.8682		9.9942	61 37.0	6.51	12.06	
3670	0.3084	0.9356		9.9935	71 45.2	4.30	13.06	
3680	+0.1383	+0.9743		9.9930	81 55.1	- 1.94	13.64	
3690	-0.0361	-0.9827	0.0000	9.9927	92 6.3	+ 0.52	-13.79	0.00
MARS.								
Days from Epoch.	x .	y .	z .	Log Radius Vector.	Longitude in Orbit.	$-\frac{x^2}{r^2}$.	$-\frac{y^2}{r^2}$.	$-\frac{z^2}{r^2}$.
3330	+0.2249	-1.4132	-0.0357	0.1562	230 27.2	-0.14	+0.85	+0.02
3340	0.3660	1.3744	0.0383	0.1531	236 23.7	0.23	0.85	0.02
3350	0.5049	1.3194	0.0405	0.1502	242 25.2	0.31	0.83	0.03
3360	0.6386	1.2510	0.0422	0.1477	248 31.2	0.40	0.80	0.03
3370	0.7655	1.1692	0.0435	0.1455	254 41.3	0.50	0.76	0.03
3380	0.8840	1.0746	0.0444	0.1436	260 55.0	0.58	0.71	0.03
3390	0.9927	0.9681	0.0447	0.1421	267 11.4	0.66	0.64	0.03
3400	+1.0906	-0.8511	-0.0446	0.1411	273 29.9	-0.73	+0.57	+0.03

NOTE. — The Epoch is the 2400,000th day of the Julian Period = 1858, November 18.

HELIOCENTRIC COÖRDINATES. 407

MARS.

Days from Epoch.	x .	y .	z .	Log Radius Vector.	Longitude in Orbit.	$-\frac{x^2}{r^3}x$.	$-\frac{xy}{r^3}y$.	$-\frac{z^2}{r^3}z$.
3410	+1.1763	-0.7247	-0.0440	0.1405	279 49.9	-0.79	+0.49	+0.03
3420	1.2489	0.5900	0.0429	0.1404	286 10.7	0.84	0.40	0.03
3430	1.3073	0.4485	0.0413	0.1407	292 31.3	0.87	0.30	0.03
3440	1.3512	0.3021	0.0392	0.1414	298 50.8	0.90	0.20	0.03
3450	1.3800	0.1526	0.0367	0.1426	305 8.7	0.91	0.10	0.02
3460	1.3935	-0.0013	0.0338	0.1442	311 24.2	0.91	+0.01	0.02
3470	1.3918	+0.1501	0.0305	0.1462	317 36.6	0.90	-0.09	0.02
3480	1.3752	0.2999	0.0269	0.1486	323 45.3	0.87	0.19	0.02
3490	1.3442	0.4467	0.0230	0.1513	329 49.6	0.84	0.28	0.01
3500	1.2994	0.5886	0.0189	0.1543	335 49.3	0.79	0.36	0.01
3510	1.2411	0.7244	0.0145	0.1575	341 44.0	0.74	0.43	0.01
3520	1.1703	0.8532	0.0101	0.1608	347 33.3	0.68	0.50	+0.01
3530	1.0882	0.9736	0.0055	0.1644	353 17.0	0.62	0.55	0.00
3540	0.9959	1.0849	-0.0009	0.1681	358 55.0	0.55	0.60	0.00
3550	0.8942	1.1861	+0.0037	0.1718	4 27.3	0.48	0.64	0.00
3560	0.7844	1.2766	0.0083	0.1755	9 54.0	0.41	0.67	0.00
3570	0.6678	1.3557	0.0128	0.1793	15 15.3	0.34	0.69	-0.01
3580	0.5454	1.4232	0.0172	0.1830	20 30.6	0.27	0.71	0.01
3590	0.4184	1.4790	0.0215	0.1867	25 40.8	0.20	0.72	0.01
3600	0.2880	1.5228	0.0256	0.1903	30 45.9	0.14	0.72	0.01
3610	0.1554	1.5545	0.0295	0.1938	35 46.0	0.07	0.72	0.01
3620	+0.0217	1.5740	0.0331	0.1971	40 41.5	-0.01	0.71	0.02
3630	-0.1123	1.5815	0.0365	0.2002	45 32.6	+0.05	0.70	0.02
3640	0.2455	1.5773	0.0397	0.2032	50 19.7	0.11	0.69	0.02
3650	0.3768	1.5617	0.0426	0.2060	55 2.9	0.16	0.67	0.02
3660	0.5056	1.5349	0.0451	0.2085	59 42.6	0.21	0.64	0.02
3670	0.6308	1.4974	0.0473	0.2109	64 19.1	0.26	0.61	0.02
3680	0.7515	1.4497	0.0492	0.2131	68 52.8	0.31	0.59	0.02
3690	-0.8673	+1.3919	+0.0508	0.2150	73 23.9	+0.35	-0.56	-0.02

JUPITER.

Days from Epoch.	x .	y .	z .	Log Radius Vector.	Longitude in Orbit.	$-\frac{x^2}{r^3}x$.	$-\frac{xy}{r^3}y$.	$-\frac{z^2}{r^3}z$.
3330	+4.77989	-1.39389	-0.10311	0.69723	343 44 54	-174.86	+50.99	+3.77
3340	4.79959	1.31764	0.10333	0.69708	344 39 16	175.77	48.25	3.80
3350	4.81814	1.24107	0.10452	0.69693	345 33 40	176.64	45.50	3.83
3360	4.83555	1.16420	0.10518	0.69678	346 28 6	177.46	42.73	3.86
3370	4.85180	1.08706	0.10582	0.69664	347 22 35	178.23	39.93	3.89
3380	4.86688	1.00966	0.10644	0.69650	348 17 6	178.95	37.12	3.91
3390	4.88079	0.93201	0.10703	0.69637	349 11 39	179.62	34.30	3.94
3400	4.89352	0.85414	0.10759	0.69624	350 6 13	180.25	31.47	3.96
3410	4.90507	0.77606	0.10813	0.69612	351 0 50	180.83	28.61	3.99
3420	4.91543	0.69779	0.10864	0.69600	351 55 28	181.36	25.74	4.01
3430	4.92460	0.61935	0.10913	0.69588	352 50 9	181.84	22.87	4.03
3440	4.93257	0.54077	0.10959	0.69577	353 44 51	182.27	19.98	4.05
3450	4.93936	0.46205	0.11002	0.69567	354 39 34	182.65	17.08	4.07
3460	4.94496	0.38322	0.11043	0.69557	355 34 19	182.99	14.18	4.09
3470	+4.94936	-0.30430	-0.11081	0.69548	356 29 6	-183.27	+11.27	+4.11

NOTE. — The Epoch is the 2400,000th day of the Julian Period = 1858, November 16.

408 HELIOCENTRIC COÖRDINATES.

JUPITER.

Days from Epoch.	x .	y .	z .	Log Radius Vector.	Longitude in Orbit.	$-\frac{x^2}{r^3}x$.	$-\frac{x^2}{r^3}y$.	$-\frac{x^2}{r^3}z$.
3480	+4.95255	-0.22530	-0.11116	0.69539	357° 23' 54"	-183.50	+ 8.35	-4.12
3490	4.95454	0.14625	0.11148	0.69530	358 18 43	183.68	5.42	4.14
3500	4.95533	-0.06717	0.11178	0.69522	359 13 34	183.81	+ 2.49	4.15
3510	4.95491	+0.01193	0.11205	0.69515	0 8 25	183.89	- 0.44	4.16
3520	4.95328	0.09104	0.11229	0.69508	1 3 18	183.92	3.38	4.17
3530	4.95045	0.17013	0.11251	0.69501	1 58 12	183.89	6.32	4.18
3540	4.94641	0.24917	0.11270	0.69495	2 53 7	183.82	9.26	4.19
3550	4.94116	0.32815	0.11286	0.69490	3 48 3	183.70	12.20	4.20
3560	4.93471	0.40705	0.11299	0.69485	4 43 0	183.52	15.14	4.20
3570	4.92706	0.48585	0.11310	0.69480	5 37 57	183.29	18.07	4.21
3580	4.91820	0.56453	0.11318	0.69476	6 32 55	183.02	21.00	4.21
3590	4.90814	0.64307	0.11323	0.69473	7 27 53	182.69	23.93	4.22
3600	4.89688	0.72145	0.11325	0.69470	8 22 52	182.31	26.85	4.22
3610	4.88442	0.79966	0.11325	0.69467	9 17 51	181.87	29.77	4.22
3620	4.87078	0.87767	0.11322	0.69465	10 12 51	181.38	32.68	4.22
3630	4.85596	0.95547	0.11316	0.69464	11 7 51	180.85	35.59	4.22
3640	4.83995	1.03304	0.11307	0.69463	12 2 52	180.27	38.48	4.21
3650	4.82276	1.11036	0.11295	0.69462	12 57 52	179.64	41.36	4.21
3660	4.80439	1.18741	0.11281	0.69463	13 52 52	178.95	44.23	4.20
3670	4.78485	1.26416	0.11264	0.69463	14 47 53	178.21	47.09	4.20
3680	4.76413	1.34061	0.11244	0.69464	15 42 53	177.42	49.93	4.19
3690	4.74224	1.41673	0.11222	0.69466	16 37 53	176.59	52.75	4.18
3700	+4.71919	+1.49249	-0.11197	0.69468	17 32 52	-175.71	-55.56	-4.17

SATURN.

Days from Epoch.	x .	y .	z .	Log Radius Vector.	Longitude in Orbit.	$-\frac{x^2}{r^3}x$.	$-\frac{x^2}{r^3}y$.	$-\frac{x^2}{r^3}z$.
3330	-5.29910	-8.42317	+0.35235	0.99816	237° 48' 0"	+7.26	+11.54	-0.48
3340	5.25484	8.45281	0.35106	0.99823	238 6 23	7.19	11.57	0.48
3350	5.21042	8.48220	0.34977	0.99830	238 24 46	7.13	11.61	0.48
3360	5.16585	8.51133	0.34846	0.99837	238 43 8	7.06	11.64	0.48
3370	5.12112	8.54021	0.34714	0.99843	239 1 30	7.00	11.68	0.47
3380	5.07624	8.56883	0.34581	0.99850	239 19 52	6.93	11.71	0.47
3390	5.03121	8.59719	0.34447	0.99857	239 38 13	6.87	11.74	0.47
3400	4.98603	8.62530	0.34312	0.99864	239 56 34	6.81	11.77	0.47
3410	4.94070	8.65315	0.34176	0.99870	240 14 55	6.75	11.80	0.47
3420	4.89522	8.68074	0.34039	0.99877	240 33 15	6.68	11.84	0.46
3430	4.84960	8.70807	0.33901	0.99883	240 51 35	6.61	11.87	0.46
3440	4.80384	8.73515	0.33762	0.99890	241 9 55	6.54	11.90	0.46
3450	4.75793	8.76197	0.33622	0.99896	241 28 14	6.48	11.93	0.46
3460	4.71189	8.78852	0.33481	0.99903	241 46 33	6.41	11.96	0.46
3470	4.66571	8.81481	0.33339	0.99909	242 4 51	6.35	11.99	0.45
3480	4.61939	8.84084	0.33196	0.99915	242 23 9	6.28	12.02	0.45
3490	4.57293	8.86661	0.33052	0.99921	242 41 27	6.22	12.05	0.45
3500	4.52634	8.89211	0.32908	0.99927	242 59 45	6.15	12.08	0.45
3510	4.47962	8.91735	0.32762	0.99933	243 18 2	6.09	12.11	0.45
3520	4.43276	8.94233	0.32615	0.99939	243 36 19	6.02	12.14	0.44
3530	4.38577	8.96704	0.32467	0.99945	243 54 36	5.96	12.17	0.44
3540	-4.33966	-8.99149	+0.32318	0.99951	244 12 52	+5.89	+12.20	-0.44

NOTE. — The Epoch is the 2400,000th day of the Julian Period = 1858, November 24.

HELIOCENTRIC COÖRDINATES. 409

SATURN.

Days from Epoch.	x .	y .	z .	Log Radius Vector.	Longitude in Orbit.	$-\frac{x^2}{r^3}x$.	$-\frac{x^2}{r^3}y$.	$-\frac{x^2}{r^3}z$.
3550	-4.29142	-9.01567	+0.32168	0.99957	244 31 8	+5.82	+12.33	-0.44
3560	4.24405	9.03958	0.32017	0.99963	244 49 23	5.75	12.25	0.43
3570	4.19656	9.06322	0.31866	0.99968	245 7 38	5.69	12.28	0.43
3580	4.14894	9.08659	0.31714	0.99974	245 25 53	5.62	12.31	0.43
3590	4.10120	9.10969	0.31561	0.99980	245 44 8	5.56	12.33	0.43
3600	4.05333	9.13262	0.31406	0.99985	246 2 22	5.49	12.36	0.43
3610	4.00534	9.15508	0.31250	0.99991	246 20 36	5.42	12.39	0.42
3620	3.95724	9.17737	0.31094	0.99996	246 38 50	5.35	12.41	0.42
3630	3.90903	9.19939	0.30937	1.00001	246 57 4	5.29	12.44	0.42
3640	3.86070	9.22114	0.30779	1.00006	247 15 17	5.22	12.46	0.42
3650	3.81226	9.24262	0.30620	1.00011	247 33 30	5.15	12.49	0.41
3660	3.76370	9.26382	0.30461	1.00017	247 51 43	5.08	12.51	0.41
3670	3.71503	9.28475	0.30300	1.00022	248 9 56	5.02	12.54	0.41
3680	3.66625	9.30541	0.30137	1.00027	248 28 8	4.95	12.56	0.41
3690	3.61736	9.32580	0.29974	1.00032	248 46 20	4.88	12.58	0.40
3700	-3.56837	-9.34591	+0.29811	1.00036	249 4 32	+4.81	+12.60	-0.40

URANUS.

Days from Epoch.	x .	y .	z .	Log Radius Vector.	Longitude in Orbit.	$-\frac{x^2}{r^3}x$.	$-\frac{x^2}{r^3}y$.	$-\frac{x^2}{r^3}z$.
3360	-3.60054	+18.46022	+0.11930	1.27435	101 2 12	+0.10	-0.53	0.00
3400	3.75625	18.42234	0.12118	1.27420	101 31 28	0.11	0.53	0.00
3440	3.91171	18.38314	0.12304	1.27405	102 0 46	0.11	0.53	0.00
3480	4.06691	18.34263	0.12489	1.27389	102 30 5	0.12	0.53	0.00
3520	4.22184	18.30081	0.12673	1.27374	102 59 25	0.12	0.52	0.00
3560	4.37649	18.25770	0.12856	1.27359	103 28 47	0.13	0.52	0.00
3600	4.53084	18.21328	0.13039	1.27344	103 58 11	0.13	0.52	0.00
3640	4.68488	18.16754	0.13220	1.27329	104 27 36	0.13	0.52	0.00
3680	4.83860	18.12049	0.13400	1.27314	104 57 2	0.14	0.52	0.00
3720	-4.99202	+18.07212	+0.13579	1.27299	105 26 30	+0.14	-0.52	0.00

NEPTUNE.

Days from Epoch.	x .	y .	z .	Log Radius Vector.	Longitude in Orbit.	$-\frac{x^2}{r^3}x$.	$-\frac{x^2}{r^3}y$.	$-\frac{x^2}{r^3}z$.
3360	+28.9056	+7.3343	-0.8344	1.47470	14 15.0	-0.27	-0.07	+0.01
3400	28.8737	7.4569	0.8361	1.47469	14 29.6	0.27	0.07	0.01
3440	28.8413	7.5795	0.8378	1.47469	14 44.2	0.27	0.07	0.01
3480	28.8083	7.7020	0.8395	1.47468	14 58.8	0.27	0.07	0.01
3520	28.7748	7.8243	0.8412	1.47467	15 13.4	0.27	0.07	0.01
3560	28.7407	7.9464	0.8428	1.47467	15 28.1	0.27	0.08	0.01
3600	28.7061	8.0684	0.8444	1.47466	15 42.7	0.27	0.08	0.01
3640	28.6710	8.1903	0.8460	1.47465	15 57.3	0.27	0.08	0.01
3680	+28.6354	+8.3120	-0.8476	1.47464	16 11.9	-0.27	-0.08	+0.01

NOTE. — The Epoch is the 2400,000th day of the Julian Period = 1868, November 16.

410 HELIOCENTRIC COÖRDINATES.

INCLINATIONS AND NODES.

Planets.	Inclination.	Increase in 100 Days.	Longitude of Ascending Node.	Increase in 100 Days.
Mercury . . .	7° 0' 8.8	+0.01952	46° 39' 20"	11.639
Venus . . .	3 23 36.3	+0.01195	75 25 35	9.001
Mars . . .	1 51 2.1	—0.00586	48 27 42	7.579
Jupiter . . .	1 18 39.5	—0.05689	99 1 38	9.993
Saturn . . .	2 29 21.2	—0.03824	112 24 8	8.570
Uranus . . .	0 46 29.8	+0.00634	73 16 44	4.898
Neptune . . .	1 46 29.0		130 12 8	

LOGARITHMS OF MASSES.

Sun's = 1.

Mercury, 93.3129	The Earth, 94.44985	Jupiter, 96.979689	Uranus, 95.60371
Venus, 94.4089	Mars, 93.57176	Saturn, 96.45573	Neptune, 95.72630

ECLIPSES IN 1868.

In the year 1868 there will be two Eclipses, both of the Sun; and a Transit of Mercury over the Sun's disc.

I. An Annular Eclipse of the Sun, February 22-23, 1868, invisible at Washington, with the following elements:—

Washington mean time of δ in Right Ascension, February 22 21 15 33.6.

Sun's and Moon's R. A.	22 ^h 24 ^m 42.47 ^s	Hourly Motions	9.51 and 118.27
Sun's Declination	— 9° 56' 23.1"	Hourly Motion	+ 0' 54.9"
Moon's Declination	— 9 52 21.1	" "	+ 8 23.1
Sun's Equa. Hor. Par.	8.7	True Semidiameter	16 9.6
Moon's Equa. Hor. Par.	54 35.7	" "	14 51.9

From these elements may be deduced the following results:—

Eclipse begins on the Earth, February 22^d 18^h 9^m.0, Washington mean time, in longitude 1° 6'.4 West from Washington, and in latitude 12° 50'.2 South.

Central Eclipse begins on the Earth 19^h 16^m.1, in longitude 17° 36'.6 West from Washington, and in latitude 11° 22'.1 South.

Central Eclipse at Noon 21^h 15^m.6, in longitude 315° 28'.8 West from Washington, and in latitude 5° 43'.8 South.

Central Eclipse ends on the Earth 23^h 10^m.3, in longitude 257° 42'.4 West from Washington, and in latitude 19° 30'.1 North.

Eclipse ends on the Earth 23^d 0^h 17^m.4, in longitude 274° 10'.8 West from Washington, and in latitude 18° 2'.3 North.

DATA FOR COMPUTING THE ECLIPSE FOR ANY PLACE, FOR PENUMBRA.

Wash. M. Time.	A.	B.	C.	log R.	log P.	log G.	log H.	μ
^h ^m				9.99	9.99	—9.25	—9.22	
18 0	—1.60330	+0.19760	—0.94222	3005	3728	0677	7368	266° 34' 52.1
18 10	1.52133	0.22039	0.91943	3008	3731	0573	7258	269 4 53.6
18 20	1.43936	0.24318	0.89664	3012	3734	0468	7148	271 34 55.2
18 30	1.35739	0.26598	0.87384	3015	3738	0364	7038	274 4 56.8
18 40	1.27541	0.28878	0.85104	3019	3741	0260	6928	276 34 58.3
18 50	1.19343	0.31158	0.82823	3022	3744	0156	6818	279 4 59.9
19 0	1.11145	0.33439	0.80541	3026	3747	*051	6707	281 35 1.5
19 10	1.02947	0.35720	0.78259	3029	3751	9947	6597	284 5 3.0
19 20	0.94749	0.38001	0.75977	3032	3754	9842	6487	286 35 4.6
19 30	0.86550	0.40283	0.73694	3036	3757	9738	6376	289 5 6.2
19 40	—0.78351	+0.42565	—0.71411	3039	3760	9634	6266	291 35 7.8

OUTLINES AND PATH OF THE PENUMBRA, AND THE CENTRAL LINE
OF THE ANNULAR ECLIPSE OF FEBRUARY 22-23, 1868.



DATA FOR COMPUTING THE ECLIPSE FOR ANY PLACE, FOR PENUMBRA.

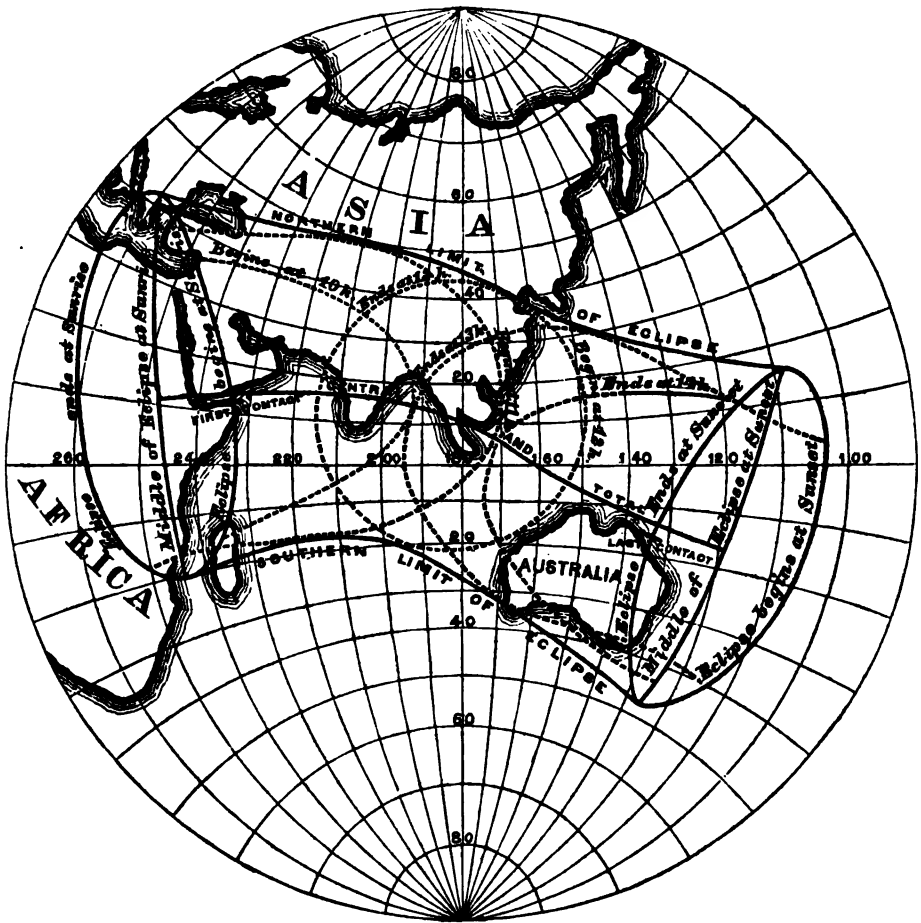
Wash. M. Time.	A.	B.	C.	log E.	log F.	log G.	log H.	μ
^h ^m				9.99	9.99	-9.24	-9.22	
19 50	-0.70152	+0.44847	-0.69127	3043	3763	9529	6156	294° 5' 9.3
20 0	0.61953	0.47129	0.66843	3046	3767	9424	6045	296 35 10.9
20 10	0.53754	0.49412	0.64558	3049	3770	9320	5935	299 5 12.5
20 20	0.45555	0.51695	0.62273	3053	3773	9216	5824	301 35 14.0
20 30	0.37356	0.53978	0.59988	3056	3776	9111	5713	304 5 15.6
20 40	0.29157	0.56262	0.57702	3060	3780	9006	5603	306 35 17.2
20 50	0.20958	0.58546	0.55416	3063	3783	8902	5492	309 5 18.8
21 0	0.12758	0.60831	0.53129	3066	3786	8797	5382	311 35 20.3
21 10	-0.04559	0.63116	0.50842	3070	3789	8692	5271	314 5 21.9
21 20	+0.03640	0.65401	0.48555	3073	3792	8588	5160	316 35 23.5
21 30	0.11839	0.67686	0.46267	3077	3796	8483	5049	319 5 25.0
21 40	0.20038	0.69971	0.43979	3080	3799	8378	4939	321 35 26.6
21 50	0.28237	0.72257	0.41690	3083	3802	8273	4828	324 5 28.2
22 0	0.36436	0.74543	0.39401	3087	3805	8168	4717	326 35 29.8
22 10	0.44635	0.76829	0.37112	3090	3808	8064	4606	329 5 31.4
22 20	0.52834	0.79115	0.34823	3094	3812	7959	4495	331 35 32.9
22 30	0.61032	0.81402	0.32533	3097	3815	7854	4384	334 5 34.5
22 40	0.69230	0.83689	0.30243	3100	3818	7749	4273	336 35 36.1
22 50	0.77428	0.85976	0.27953	3104	3821	7644	4162	339 5 37.7
23 0	0.85626	0.88264	0.25662	3107	3824	7538	4051	341 35 39.2
23 10	0.93824	0.90551	0.23371	3110	3828	7433	3940	344 5 40.8
23 20	1.02021	0.92839	0.21080	3114	3831	7328	3829	346 35 42.4
23 30	1.10218	0.95127	0.18788	3117	3834	7223	3718	349 5 44.0
23 40	1.18415	0.97415	0.16496	3121	3837	7118	3607	351 35 45.6
23 50	1.26612	0.99703	0.14204	3124	3840	7013	3495	354 5 47.1
0 0	1.34808	1.01991	0.11911	3127	3844	6908	3384	356 35 48.7
0 10	1.43004	1.04279	0.09619	3131	3847	6802	3273	359 5 50.3
0 20	+1.51200	+1.06567	-0.07326	3134	3850	6697	3161	1 35 51.9

FOR SHADOW.

Washington Mean Time.	B.	C.	Washington Mean Time.	B.	C.
^h ^m			^h ^m		
19 10	-0.18879	-0.23660	21 20	+0.10803	+0.06043
19 20	0.16598	0.21378	21 30	0.13068	0.08331
19 30	0.14316	0.19096	21 40	0.15373	0.10619
19 40	0.12034	0.16813	21 50	0.17659	0.12908
19 50	0.09752	0.14529	22 0	0.19945	0.15197
20 0	0.07469	0.12245	22 10	0.22231	0.17486
20 10	0.05186	0.09960	22 20	0.24517	0.19775
20 20	0.02903	0.07675	22 30	0.26804	0.22065
20 30	-0.00620	0.05390	22 40	0.29091	0.24355
20 40	+0.01664	0.03104	22 50	0.31378	0.26645
20 50	0.03948	-0.00818	23 0	0.33666	0.28936
21 0	0.06233	+0.01469	23 10	0.35953	0.31227
21 10	+0.08518	+0.03756	23 20	+0.38241	+0.33518

A and μ are given in the Table for Penumbra, and the values of log E, log F, log G, and log H may be obtained from corresponding values for Penumbra, by numerically increasing log E and decreasing log F by 0.000002, and by numerically decreasing log G by 0.000056 and increasing log H by 0.000059.

OUTLINES AND PATH OF THE PENUMBRA, AND THE CENTRAL LINE
OF THE TOTAL ECLIPSE OF AUGUST 17, 1868.



CHANGES OF THE QUANTITIES IN THE TABLES OF DATA.

Washington Mean Time.	For one Minute.			For one Second.		
	A.	B.	C.	A'.	B'.	C'.
^h ^m 18 0	+8196.6	+2278.9	+2278.7	+136.61	+37.98	+37.98
18 30	8197.4	2279.9	2280.2	136.62	38.00	38.00
19 0	8198.1	2280.8	2281.6	136.63	38.01	38.03
19 30	8198.6	2281.8	2283.0	136.64	38.03	38.05
20 0	8198.9	2282.7	2284.3	136.65	38.04	38.07
20 30	8199.1	2283.6	2285.6	136.65	38.06	38.09
21 0	8199.1	2284.5	2286.8	136.65	38.07	38.11
21 30	8199.0	2285.3	2287.9	136.65	38.09	38.13
22 0	8198.7	2286.1	2288.9	136.64	38.10	38.15
22 30	8198.3	2286.7	2289.9	136.64	38.11	38.16
23 0	8197.7	2287.3	2290.8	136.63	38.12	38.18
23 30	8196.9	2287.7	2291.6	136.61	38.13	38.19
0 0	8196.0	2288.0	2292.3	136.60	38.13	38.20
0 30	+8194.9	+2288.2	+2292.8	+136.58	+38.14	+38.21

II. A Total Eclipse of the Sun, August 17, 1868, invisible at Washington, with the following elements:—

Washington mean time of δ in Right Ascension, August 17^d 12^h 4^m 50.4^s.

Sun's and Moon's R. A.	^h ^m ^s 9 51 0.15	Hourly Motions	^s 9.31 and 151.59
Sun's Declination	+13° 2' 6.2"	Hourly Motion	— 0' 48.6"
Moon's Declination	+12 59 16.4	" "	— 9 27.8
Sun's Equa. Hor. Par.	8.5	True Semidiameter	15 48.6
Moon's Equa. Hor. Par.	61 20.3	" "	16 42.0

From these elements may be deduced the following results:—

Eclipse begins on the Earth, August 17^d 9^h 26^m.4, Washington mean time, in longitude 233° 30.9 West from Washington, and in latitude 12° 4.3 North.

Central Eclipse begins on the Earth 10^h 21^m.0, in longitude 246° 57.9 West from Washington, and in latitude 11° 12.8 North.

Central Eclipse at Noon 12^h 4^m.8, in longitude 180° 18.5 West from Washington, and in latitude 10° 27.2 North.

Central Eclipse ends on the Earth 13^h 46^m.3, in longitude 119° 31.8 West from Washington, and in latitude 16° 15.9 South.

Eclipse ends on the Earth 14^h 41^m.0, in longitude 132° 58.6 West from Washington, and in latitude 15° 24.2 South.

DATA FOR COMPUTING THE ECLIPSE FOR ANY PLACE, FOR PENUMBRA.

Wash. M. Time.	A.	B.	C.	log E.	log F.	log G.	log H.	μ
^h ^m 9 20	—1.55609	+0.87273	—0.18950	9.98	9.98	+9.34	+9.36	139° 5' 16.7
9 30	1.46170	0.84926	0.21300	9064	8132	5693	2982	141 35 18.9
9 40	1.36731	0.82578	0.23651	9068	8136	5620	2912	144 5 21.1
9 50	1.27291	0.80229	0.26002	9072	8140	5547	2841	146 35 23.3
10 0	1.17851	0.77880	0.28354	9076	8144	5473	2771	149 5 25.5
10 10	—1.08411	+0.75530	—0.30706	9079	8148	5400	2701	149 5 25.5
10 10	—1.08411	+0.75530	—0.30706	9083	8152	5327	2631	151 35 27.7

DATA FOR COMPUTING THE ECLIPSE FOR ANY PLACE, FOR PENUMBRA.

Wash. M. Time.	A.	B.	C.	log E.	log F.	log G.	log H.	μ
h m				9.98	9.98	+9.34	+9.36	
10 20	-0.98971	+0.73179	-0.33059	9087	8156	5254	2561	154° 5' 29.9
10 30	0.89531	0.70828	0.35412	9091	8160	5181	2490	156 35 32.1
10 40	0.80091	0.68476	0.37765	9094	8164	5107	2420	159 5 34.2
10 50	0.70651	0.66124	0.40119	9098	8168	5034	2350	161 35 36.4
11 0	0.61210	0.63771	0.42473	9102	8172	4961	2280	164 5 38.6
11 10	0.51769	0.61417	0.44828	9106	8176	4887	2209	166 35 40.8
11 20	0.42329	0.59063	0.47183	9110	8180	4814	2139	169 5 43.0
11 30	0.32889	0.56709	0.49538	9113	8184	4741	2069	171 35 45.2
11 40	0.23449	0.54354	0.51894	9117	8188	4667	1998	174 5 47.4
11 50	0.14009	0.51999	0.54250	9121	8192	4594	1928	176 35 49.6
12 0	-0.04569	0.49643	0.56607	9125	8196	4521	1857	179 5 51.8
12 10	+0.04871	0.47286	0.58964	9129	8199	4447	1787	181 35 54.0
12 20	0.14311	0.44929	0.61321	9132	8203	4374	1717	184 5 56.1
12 30	0.23750	0.42572	0.63679	9136	8207	4300	1646	186 35 58.3
12 40	0.33190	0.40214	0.66038	9140	8211	4227	1576	189 6 0.5
12 50	0.42629	0.37855	0.68397	9144	8215	4153	1505	191 36 2.7
13 0	0.52068	0.35496	0.70756	9147	8219	4080	1435	194 6 4.9
13 10	0.61507	0.33136	0.73115	9151	8223	4006	1364	196 36 7.1
13 20	0.70946	0.30776	0.75475	9155	8227	3933	1294	199 6 9.3
13 30	0.80384	0.28415	0.77835	9159	8231	3859	1223	201 36 11.5
13 40	0.89822	0.26054	0.80195	9163	8235	3785	1153	204 6 13.7
13 50	0.99259	0.23692	0.82555	9166	8239	3712	1082	206 36 15.9
14 0	1.08696	0.21330	0.84916	9170	8243	3638	1011	209 6 18.1
14 10	1.18133	0.18968	0.87277	9174	8247	3565	0941	211 36 20.3
14 20	1.27569	0.16605	0.89638	9178	8251	3491	0870	214 6 22.5
14 30	1.37005	0.14242	0.92000	9181	8255	3417	0800	216 36 24.7
14 40	1.46440	0.11879	0.94362	9185	8258	3343	0729	219 6 26.9
14 50	+1.55875	+0.09516	-0.96724	9189	8262	3270	0658	221 36 29.1

FOR SHADOW.

Washington Mean Time.	B.	C.	Washington Mean Time.	B.	C.
h m			h m		
10 20	+0.18599	+0.21521	12 10	-0.07293	-0.04385
10 30	0.16248	0.19168	12 20	0.09650	0.06742
10 40	0.13896	0.16815	12 30	0.12007	0.09100
10 50	0.11544	0.14461	12 40	0.14365	0.11459
11 0	0.09191	0.12107	12 50	0.16724	0.13818
11 10	0.06838	0.09752	13 0	0.19083	0.16177
11 20	0.04484	0.07397	13 10	0.21443	0.18536
11 30	+0.02130	0.05041	13 20	0.23803	0.20896
11 40	-0.00225	0.02685	13 30	0.26164	0.23256
11 50	0.02580	+0.00329	13 40	0.28525	0.25616
12 0	-0.04936	-0.02028	13 50	-0.30887	-0.27976

A and μ are given in the Table for Penumbra, and the values of log E, log F, log G, and log H may be obtained from the corresponding values for Penumbra, by numerically decreasing log E and increasing log F by 0.000002, and by numerically increasing log G by 0.000043 and decreasing log H by 0.000041.

CHANGES OF THE QUANTITIES IN THE TABLES OF DATA.

Washington Mean Time.	For one Minute.			For one Second.		
	A.	B.	C.	A'.	B.	C.
^h ^m 9 0	+9438.6	—2345.4	—2349.0	+157.31	—39.09	—39.15
9 30	9439.3	2347.5	2350.5	157.32	39.12	39.17
10 0	9439.8	2349.5	2351.9	157.33	39.16	39.20
10 30	9440.2	2351.4	2353.2	157.34	39.19	39.22
11 0	9440.3	2353.1	2354.5	157.34	39.22	39.24
11 30	9440.2	2354.7	2355.7	157.34	39.24	39.26
12 0	9439.9	2356.2	2356.9	157.33	39.27	39.28
12 30	9439.5	2357.8	2358.1	157.32	39.30	39.30
13 0	9438.9	2359.4	2359.1	157.31	39.32	39.32
13 30	9438.0	2360.9	2360.0	157.30	39.35	39.33
14 0	9436.9	2362.0	2360.9	157.28	39.37	39.35
14 30	9435.7	2363.0	2361.7	157.26	39.38	39.36
15 0	+9434.4	—2363.8	—2362.4	+157.24	—39.40	—39.37

III. A Transit of Mercury over the Sun's disc, November 4, 1868, invisible at Washington, with the following elements:—

Washington mean time of δ in Right Ascension, November 4 ^d ^h ^m ^s 13 4 7.8			
Sun's and Mercury's R. A. 14 ^h ^m ^s 42 44.69	Hourly Motions	+9.94 and —12.02	
Sun's Declination —15° 47' 35.5	Hourly Motion	— 0' 45.4	
Mercury's Declination —16 1 13.5	" "	+ 1 49.2	
Sun's Equa. Hor. Par. 8.66	True Semidiameter	16 8.7	
Mercury's Equa. Hor. Par. 12.71	" "	4.95	

From these elements may be deduced the following results, with reference to the centre of the Earth:—

Ingress, external contact, November	^d ^h ^m ^s 4 12 16 33
Middle of Transit, "	4 14 5 12
Egress, external contact, "	4 15 53 54
Least distance of centres	12' 15".1

First contact of Mercury with Sun's limb 165° from North point towards the East, when the Sun is in the Zenith in longitude 188° 12'.3 West from Washington, and in latitude 15° 53'.0 South.

Last contact of Mercury with Sun's limb 113° from North point towards the West, when the Sun is in the Zenith in longitude 242° 32'.6 West from Washington, and in latitude 15° 55'.8 South.

The Washington Mean Time of external contact at Ingress and Egress for any point on the surface of the Earth may be computed from the following formulas, in which R is the radius of the Earth at the place, θ the geocentric North latitude, and λ the longitude West from Washington:—

$$\begin{aligned} \text{Ingress} & 12^h 16^m 32.7 + 58.55 R \sin \theta - 23.43 R \cos \theta \cos (\lambda - 52^\circ 10'.9) \\ \text{Egress} & 15^h 53^m 54.1 - 23.67 R \sin \theta + 58.49 R \cos \theta \cos (\lambda + 20^\circ 33'.7) \end{aligned}$$

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF
PLANETS AND STARS BY THE MOON, FOR THE YEAR 1868.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Wash- ington Mean Time of δ .	At Washington Mean Time of Conjunction.							
			North- ern.	South- ern.		H	Y	p'	q'	Log sin D	Log cos D		
Jan.	1	20 Piscium	6	+19	-51	0 33.5	-4	25 1	-0.2685	0.5285	+1.767	-8.7852	9.9992
	1	24 Piscium	6½	+76	-2	3 6.6	-1	56 25	+0.6081	.5227	+1.776	-8.8313	.9990
	1	29 Piscium	5½	+86	+51	7 39.4	+2	28 11	+1.2812	.5204	+1.791	-8.8171	.9990
	1	B.A.C. 8365	6½	-36	-90	9 18.3	+4	4 8	-1.1492	.5207	+1.794	-8.3344	9.9999
	1	10 Ceti	6	+55	-16	20 13.4	-9	20 36	+0.3366	.5323	+1.816	-8.1353	0.0000
	2	f Piscium	6	+90	+24	21 34.7	-8	46 16	+1.0014	.5416	+1.808	+8.7067	9.9994
	2	B.A.C. 408	6½	+49	-21	23 57.3	-6	28 10	+0.2389	.5427	+1.803	+8.8485	.9989
	3	μ Piscium	4½	+1	-76	3 31.2	-3	1 2	-0.6093	.5445	+1.793	+8.9784	.9980
	3	ν Piscium	4½	+90	+27	8 55.8	+2	13 8	+1.0309	.5470	+1.775	+8.9241	.9985
	3	64 Ceti	6½	+47	-22	22 56.1	-8	14 1	+0.1978	.5556	+1.706	+9.1408	.9968
	3	ξ^1 Ceti	4½	+37	-30	23 41.0	-7	30 38	+0.0394	.5562	+1.701	+9.1555	.9955
	4	B.A.C. 728	6½	-50	-80	4 21.0	-3	0 6	-1.2531	.5591	+1.671	+9.2495	.9930
	4	B.A.C. 741	6½	+35	-32	4 56.4	-2	25 53	+0.0035	.5596	+1.666	+9.1997	.9945
	4	ξ Arietis	5½	-17	-80	5 4.3	-2	18 13	-0.9009	.5598	+1.665	+9.2400	.9933
	4	B.A.C. 755	6	-5	-80	5 57.3	-1	27 1	-0.7091	.5603	+1.659	+9.2382	.9934
	4	B.A.C. 830	6	+49	-20	13 2.3	+5	23 25	+0.2326	.5652	+1.603	+9.2471	.9931
	4	μ Ceti	4	+90	+31	14 7.4	+6	26 21	+1.0442	.5660	+1.593	+9.2200	.9939
	5	B.A.C. 987	6½	+21	-44	1 40.4	-6	25 9	-0.2463	.5746	+1.476	+9.3368	.9895
	5	f Tauri	4	+90	+31	10 2.6	+1	38 59	+1.0111	.5808	+1.376	+9.3347	.9896
	5	Wei.III.1085	8½	+75	+5	23 52.8	-9	1 45	+0.5758	.5914	+1.178	+9.4033	.9856
	6	Wei.IV.24	9	+84	+10	2 30.8	-6	29 46	+0.6506	.5935	+1.135	+9.4098	.9852
	6	Lal. 7753	7½	+32	-29	2 35.5	-6	25 13	-0.0529	.5935	+1.134	+9.4296	.9837
	6	B.A.C. 1281	7	-8	-74	2 38.1	-6	22 44	-0.7509	.5936	+1.134	+9.4482	.9822
	6	Rumk. 1103	7	+52	-11	2 41.9	-6	19 2	+0.2788	.5936	+1.133	+9.4208	.9844
	6	Rumk. 1108	9	+90	+34	3 7.9	-5	54 4	+1.0186	.5939	+1.128	+9.4012	.9858
	6	Rumk. 1123	8½	+90	+45	3 54.9	-5	8 55	+1.1416	.5943	+1.114	+9.4002	.9858
	6	48 Tauri	6	+90	+13	4 33.8	-4	31 28	+0.7013	.5947	+1.101	+9.4148	.9848
	6	Rumk. 1136	6	+31	-30	4 58.5	-4	7 42	-0.0720	.5950	+1.096	+9.4372	.9831
	6	γ Tauri	4	+83	+10	6 10.9	-2	56 4	+0.6383	.5959	+1.076	+9.4215	.9843
	6	55 Tauri	7	+21	-40	6 12.8	-2	56 16	-0.2551	.5959	+1.076	+9.4456	.9824
	6	58 Tauri	6	+90	+53	6 31.2	-2	38 34	+1.2053	.5965	+1.068	+9.4065	.9854
	6	Rumk. 1161	8	-53	-73	6 48.9	-2	21 33	-1.2485	.5965	+1.064	+9.4723	.9800
	6	Rumk. 1163	8	+8	-54	6 52.0	-2	18 35	-0.4728	.5965	+1.064	+9.4530	.9818
	6	8 Tauri	4	-40	-73	7 24.4	-1	47 24	-1.1556	.5972	+1.053	+9.4716	.9801
	6	63 Tauri	6	+14	-47	7 37.0	-1	35 19	-0.3708	.5973	+1.050	+9.4524	.9818
	6	B.A.C. 1351	6½	+22	-38	7 38.5	-1	33 55	-0.2201	.5973	+1.050	+9.4486	.9821
	6	8 Tauri	6	-43	-73	7 52.5	-1	20 26	-1.1781	.5973	+1.046	+9.4682	.9803
	6	Lal. 8249	7½	-1	-67	7 59.3	-1	13 52	-0.6365	.5976	+1.043	+9.4602	.9811
	6	Lal. 8256	8	+10	-52	8 1.8	-1	11 31	-0.4381	.5979	+1.069	+9.4553	.9816
	6	70 Tauri	7	+74	+6	8 31.1	-0	43 18	+0.5541	.5981	+1.053	+9.4305	.9836
	6	Lal. 8311	8	+90	+33	8 42.7	-0	32 10	+0.9870	.5982	+1.047	+9.4192	.9845
	6	Rumk. 1188	6½	+90	+33	8 42.9	-0	32 0	+0.9885	.5982	+1.047	+9.4192	.9845
	6	Rumk. 1189	6	+16	-44	8 48.7	-0	26 23	-0.3301	.5982	+1.043	+9.4546	.9816
	6	71 Tauri	6	+90	+27	8 48.8	-0	26 17	+0.9049	.5982	+1.043	+9.4218	.9843
	6	Rumk. 1192	6	-1	-66	8 51.5	-0	23 42	-0.6259	.5983	+1.042	+9.4622	.9809
	6	Rumk. 1198	6	+90	+37	9 6.9	-0	8 54	+1.0299	.5984	+1.031	+9.4191	.9845
	6	Rumk. 1200	6	+90	+33	9 18.8	+0	2 32	+0.9806	.5985	+1.030	+9.4211	.9843
	6	Rumk. 1203	6	+53	-8	9 36.2	+0	19 13	+0.2975	.5986	+1.020	+9.4404	.9828
	6	8 Tauri	4½	+84	+11	9 41.9	+0	24 42	+0.6443	.5986	+1.015	+9.4314	.9836
	6	8 Tauri	4½	+90	+17	9 44.2	+0	26 55	+0.7394	.5986	+1.014	+9.4289	.9838
	6	Rumk. 1210	6	+65	+1	9 51.6	+0	34 3	+0.4623	.5987	+1.012	+9.4367	.9831
	6	Rumk. 1212	6	-19	-73	9 58.3	+0	40 30	-0.9107	.5988	+1.010	+9.4721	.9800
	6	Rumk. 1214	7	-49	-73	10 1.8	+0	43 50	-1.2221	.5988	+1.009	+9.4796	.9792
	6	Rumk. 1215	7	-54	-73	10 2.3	+0	44 20	-1.2523	.5988	+1.009	+9.4805	.9792
	6	80 Tauri	6	+90	+36	10 19.9	+1	1 18	+1.0273	0.5990	+1.005	+9.4226	9.9842

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1868.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of δ .	At Washington Mean Time of Conjunction.					
			North- ern.	South- ern.		H	Y	p'	q'	Log sin D	Log cos D
Jan. 6	B.A.C. 1391	5	+68	+2	10 29.2	+ 1 10 11	+0.4863	.5992	+.1001	+.94377	.9830
6	81 Tauri	5½	+90	+34	10 32.0	+ 1 12 53	+0.0920	.5992	+.0999	+.94242	.9841
6	B.A.C. 1394	7	+72	+5	10 34.6	+ 1 15 23	+0.5351	.5993	+.0999	+.94367	.9831
6	Rumk. 1227	7	+90	+27	10 48.9	+ 1 29 8	+0.8945	.5994	+.0996	+.94276	.9838
6	85 Tauri	6	+90	+26	11 0.8	+ 1 40 34	+0.8768	.5996	+.0991	+.94286	.9838
6	Rumk. 1232		+44	-16	11 12.3	+ 1 51 34	+0.1483	.5997	+.0987	+.94485	.9821
6	Rumk. 1233		-35	-73	11 18.0	+ 1 57 3	-1.1028	.5998	+.0985	+.94799	.9792
6	Rumk. 1235		+90	+18	11 23.7	+ 2 2 31	+0.7572	.5998	+.0983	+.94329	.9834
6	B.A.C. 1406	7	+66	+1	11 42.9	+ 2 21 0	+0.4693	.6001	+.0978	+.94414	.9827
6	Rumk. 1238	10	+54	-7	12 2.4	+ 2 39 45	+0.3127	.6002	+.0974	+.94420	.9827
6	Lal. 8599	9	-20	-73	12 6.2	+ 2 43 27	-0.9277	.6003	+.0973	+.94774	.9795
6	Lal. 8610	8	+26	-33	12 14.0	+ 2 50 54	-0.1587	.6003	+.0970	+.94589	.9812
6	Lal. 8613	8	+15	-46	12 15.2	+ 2 52 4	-0.3583	.6003	+.0970	+.94640	.9808
6	α Tauri	1	+58	-5	12 37.0	+ 3 12 58	+0.3588	.6004	+.0964	+.94466	.9823
6	89 Tauri	7	+90	+29	13 30.8	+ 4 4 44	+0.9175	.6012	+.0948	+.94340	.9833
6	α^1 Tauri	5½	+90	+52	13 54.9	+ 4 27 53	+1.1839	.6018	+.0940	+.94278	.9838
6	α^2 Tauri	5½	+90	+41	13 57.5	+ 4 30 20	+1.0713	.6018	+.0939	+.94310	.9836
6	Rumk. 1241		+68	+3	14 11.6	+ 4 43 54	+0.4897	.6019	+.0935	+.94471	.9823
6	Rumk. 1243	8	+70	+5	14 23.8	+ 4 55 36	+0.5144	.6020	+.0932	+.94469	.9823
6	Rumk. 1246	7	+16	-44	14 49.7	+ 5 20 29	-0.3424	.6022	+.0924	+.94607	.9802
6	Rumk. 1247		+58	-4	14 50.0	+ 5 20 47	+0.3606	.6022	+.0924	+.94520	.9819
6	Rumk. 1254		+61	-2	15 5.1	+ 5 35 14	+0.4060	.6023	+.0919	+.94514	.9819
6	Rumk. 1255		+90	+45	15 6.2	+ 5 36 19	+1.1156	.6023	+.0918	+.94327	.9834
6	Lal. 8852	9½	+24	-35	15 23.6	+ 5 53 4	-0.1961	.6025	+.0912	+.94673	.9805
6	Rumk. 1263	9½	+90	+44	15 59.6	+ 6 27 41	+1.1015	.6029	+.0901	+.94352	.9832
6	Rumk. 1276		-51	-72	17 0.2	+ 7 25 47	-1.2325	.6036	+.0882	+.94956	.9776
6	Rumk. 1294		+90	+49	18 29.6	+ 8 51 41	+1.1492	.6045	+.0856	+.94398	.9829
6	Rumk. 1299	7½	+18	-40	18 52.6	+ 9 13 48	-0.2917	.6047	+.0846	+.94772	.9795
6	Rumk. 1300		+21	-37	18 54.9	+ 9 15 56	-0.2362	.6048	+.0845	+.94759	.9796
6	B.A.C. 1526	6	+61	0	21 3.0	+11 18 56	+0.4035	.6062	+.0804	+.94645	.9807
7	m Tauri	5½	-12	-72	0 54.2	- 8 59 4	-0.8085	.6086	+.0726	+.95006	.9770
7	111 Tauri	6	+90	+26	7 28.9	- 2 40 22	+0.8173	.6123	+.0587	+.94722	.9799
7	115 Tauri	5½	+54	-4	8 32.0	- 1 39 52	+0.2976	.6128	+.0565	+.94863	.9786
7	117 Tauri	6	+90	+41	8 52.6	- 1 20 6	+1.0268	.6129	+.0559	+.94690	.9803
7	119 Tauri	5½	+22	-33	10 26.8	+ 0 10 13	-0.2331	.6139	+.0523	+.95012	.9770
7	120 Tauri	6	+26	-29	10 56.9	+ 0 39 8	-0.1605	.6139	+.0515	+.95001	.9771
7	130 Tauri	6	+90	+29	6 14.6	- 4 16 13	+0.8352	.6162	+.0400	+.94823	.9790
7	χ^1 Orionis	6	-33	-71	19 2.2	+ 8 24 22	-1.0720	.6174	+.0336	+.95281	.9737
7	B.A.C. 1930	6½	+90	+44	22 5.6	+11 20 12	+1.0406	.6184	+.0267	+.94820	.9790
7	χ^2 Orionis	5	-22	-71	22 14.4	+11 28 36	-0.9441	.6186	+.0264	+.95275	.9738
8	68 Orionis	6	-26	-70	1 27.0	- 9 26 46	-0.9954	.6196	+.0186	+.95301	.9735
8	71 Orionis	5½	+14	-39	2 31.7	- 8 24 51	-0.3695	.6199	+.0161	+.95169	.9751
8	26 Geminor	5½	+90	+48	12 50.0	+ 1 27 33	+1.0693	.6216	-.0078	+.94845	.9788
9	B.A.C. 2432	6½	+32	-22	3 57.5	- 8 3 9	-0.0531	.6217	-.0432	+.95019	.9769
9	f Geminor	6	+46	-11	10 5.3	- 2 10 50	+0.1771	.6206	-.0571	+.94893	.9783
9	g Geminor	5½	-12	-71	12 33.9	+ 0 11 31	-0.8076	.6200	-.0631	+.95088	.9761
9	3 Cancri	6	+32	-28	18 5.6	+ 5 29 29	-0.0547	.6184	-.0748	+.94821	.9790
9	5 Cancri	6	+90	+20	18 22.7	+ 5 45 52	+0.7544	.6183	-.0757	+.94613	.9810
9	B.A.C. 2731	6½	+31	-26	21 34.9	+ 8 50 4	-0.0688	.6170	-.0825	+.94757	.9797
9	ϵ^1 Cancri	4½	-9	-72	22 23.9	+ 9 37 1	-0.7638	.6169	-.0843	+.94909	.9781
9	ϵ^2 Cancri	7½	-9	-72	22 24.0	+ 9 37 6	-0.7612	.6169	-.0843	+.94909	.9781
10	δ^2 Cancri	6	-4	-70	3 36.0	- 9 23 45	-0.6776	.6148	-.0948	+.94776	.9795
10	54 Cancri	6½	+30	-30	13 18.1	- 0 5 19	-0.0835	.6102	-.1131	+.94359	.9832
10	α^1 Cancri	6	+15	-47	15 42.4	+ 2 13 9	-0.3507	.6087	-.1178	+.94357	.9832
10	α^2 Cancri	6	0	-67	15 50.1	+ 2 20 29	-0.6199	.6087	-.1179	+.94425	.9827

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF
PLANETS AND STARS BY THE MOON, FOR THE YEAR 1868.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of δ .	At Washington Mean Time of Conjunction.					
			North- ern.	South- ern.		<i>H</i>	<i>Y</i>	<i>p'</i>	<i>q'</i>	Log sin <i>D</i>	Log cos <i>D</i>
Jan. 10	π^1 Cancri	6½	-10	-75	21 37.8	+ 7 54 20	-0.7845	0.6052	-1.279	+9.4275	9.9839
10	π^2 Cancri	6	-17	-75	22 45.5	+ 8 59 19	-0.8919	.6044	-1.277	+9.4265	.9839
11	18 Leonis	6	+60	- 8	11 14.0	- 3 1 29	+0.3925	.5968	-1.482	+9.3324	.9897
11	B.A.C. 3345	6	+90	+ 9	11 42.6	- 2 33 55	+0.6952	.5964	-1.490	+9.3192	.9903
11	ν Leonis	5	-23	-77	16 2.1	+ 1 35 35	-0.9840	.5936	-1.544	+9.3544	.9886
11	A Leonis	5	+90	+14	20 2.2	+ 5 26 37	+0.7940	.5907	-1.593	+9.2664	.9925
11	α Leonis	1½	-41	-78	20 13.2	+ 5 37 8	-1.1860	.5906	-1.594	+9.3390	.9994
12	B.A.C. 3538	6½	+90	+16	1 59.3	+11 10 15	+0.8381	.5867	-1.657	+9.2232	.9938
12	44 Leonis	6	+90	+14	3 14.9	-11 36 54	+0.8008	.5859	-1.668	+9.2154	.9941
12	B.A.C. 3562	6½	+90	+13	3 23.6	-11 28 32	+0.7878	.5856	-1.672	+9.2149	.9941
12	45 Leonis	6	+16	-52	4 14.7	-10 39 20	-0.3413	.5852	-1.679	+9.2578	.9928
12	ϵ Leonis	4	+20	-47	6 25.3	- 8 33 34	-0.2619	.5836	-1.700	+9.2389	.9934
12	49 Leonis	6	+49	-19	7 22.3	- 7 38 42	+0.2284	.5829	-1.709	+9.2098	.9942
12	c Leonis	5	+90	+14	18 22.9	+ 2 57 57	+0.8251	.5757	-1.793	+9.0739	.9969
12	χ Leonis	5	- 7	-77	20 14.6	+ 4 45 42	-0.7546	.5748	-1.804	+9.1461	.9957
13	σ Leonis	4	- 6	-82	3 17.4	+11 33 29	-0.7393	.5704	-1.841	+9.0702	.9970
13	89 Leonis	6	+90	+38	9 10.3	- 6 45 55	+1.1676	.5670	-1.864	+8.8204	.9990
13	β Virginis	3½	+90	+33	16 26.5	+ 0 15 14	+1.1151	.5626	-1.884	+8.6410	.9996
14	10 Virginis	6	- 2	-82	1 8.1	+ 8 39 10	-0.6607	.5585	-1.894	+8.6630	9.9995
14	13 Virginis	6	+90	+59	5 16.0	-11 21 16	+1.3195	.5565	-1.895	-6.9711	0.0000
14	η Virginis	3½	+90	+30	5 50.5	-10 47 53	+1.0874	.5562	-1.894	+7.0658	.0000
14	γ Virginis, <i>pr.</i>	2½	+34	-35	15 59.8	- 0 58 42	-0.0104	.5521	-1.882	-8.1025	0.0000
14	B.A.C. 4277	6	+32	-38	16 52.5	- 0 7 47	-0.0496	.5516	-1.880	-8.1698	9.9999
14	38 Virginis	6	+88	+37	21 23.1	+ 4 14 3	+1.1682	.5499	-1.869	-8.6942	.9995
15	k Virginis	6	+87	+15	0 25.6	+ 7 10 36	+0.8766	.5490	-1.859	-8.7327	.9994
15	46 Virginis	6½	+55	-17	0 52.4	+ 7 36 30	+0.3347	.5488	-1.858	-8.6660	.9995
15	48 Virginis	6	+56	-16	2 26.3	+ 9 7 25	+0.3516	.5483	-1.852	-8.7117	.9994
15	65 Virginis	6	+34	-35	11 40.6	- 5 56 8	-0.0023	.5459	-1.813	-8.8680	.9988
15	66 Virginis	6	+43	-27	12 15.4	- 5 22 31	+0.1447	.5459	-1.811	-8.8919	.9987
15	ρ Virginis	5	+81	+ 2	15 49.1	- 1 55 38	+0.6604	.5450	-1.791	-8.9873	.9979
16	94 Virginis	6	+76	0	8 20.9	- 9 55 20	+0.6295	.5424	-1.686	-9.1573	.9955
16	95 Virginis	6	+82	+27	8 33.3	- 9 43 18	+1.0423	.5423	-1.683	-9.1788	.9950
17	ϵ^1 Libræ	6	+45	-21	7 41.1	-11 19 10	+0.2438	.5409	-1.479	-9.2943	.9914
17	ϵ^2 Libræ	6	+ 6	-64	8 51.2	-10 11 19	-0.4483	.5410	-1.468	-9.2756	.9921
17	18 Libræ, <i>pr.</i>	6½	-20	-90	9 54.2	- 9 10 17	-0.8965	.5410	-1.458	-9.2651	.9925
17	B.A.C. 5070	6	-47	-90	22 2.2	+ 2 34 50	-1.1943	.5412	-1.326	-9.3141	.9906
18	γ Libræ	4½	+75	+ 7	3 38.9	+ 8 0 57	+0.7382	.5416	-1.260	-9.3938	.9863
18	η Libræ	6	+75	+45	7 47.5	-11 58 18	+1.2100	.5422	-1.210	-9.4199	.9844
18	48 Libræ	4½	-38	-90	14 40.3	- 5 18 31	-1.0691	.5427	-1.124	-9.3804	.9871
18	49 Libræ	5½	+74	+56	15 42.0	- 4 18 42	+1.2679	.5430	-1.111	-9.4440	.9825
19	ϕ Ophiuchi	5	+22	-37	6 34.0	+10 5 5	-0.0370	.5444	-0.910	-9.4487	.9821
19	24 Scorpii	5	+73	+12	11 34.2	- 9 4 16	+0.8013	.5449	-0.839	-9.4777	.9795
19	B.A.C. 5695	6	-18	-90	18 33.2	- 2 18 40	-0.7308	.5455	-0.737	-9.4556	.9815
20	B.A.C. 5771	6½	+10	-48	0 24.8	+ 3 21 46	-0.2110	.5460	-0.649	-9.4765	.9796
20	B.A.C. 5839	6½	+ 2	-57	6 0.1	+ 8 46 25	-0.3510	.5468	-0.567	-9.4808	.9791
20	B.A.C. 6060	6½	+29	-24	23 15.0	+ 1 28 12	+0.1859	.5478	-0.028	-9.5076	.9762
21	B.A.C. 6267	6	-49	-90	14 37.7	- 7 38 41	-1.0775	.5480	-0.050	-9.4871	.9785
21	B.A.C. 6287	6	+13	-38	15 40.8	- 6 37 36	-0.0484	.5481	-0.033	-9.5084	.9762
21	B.A.C. 6292	6	+24	-26	16 13.6	- 6 5 55	+0.1511	.5481	-0.026	-9.5124	.9757
21	B.A.C. 6293	6½	-15	-75	16 16.6	- 6 2 58	-0.5592	.5481	-0.026	-9.4980	.9773
21	B.A.C. 6294	6	- 6	-61	16 17.3	- 6 2 18	-0.3987	.5481	-0.026	-9.5013	.9770
22	B.A.C. 6536	6	+71	+21	9 58.2	+11 4 42	+0.9213	.5474	+0.026	-9.5233	.9744
22	d Sagittarii	5	+70	+ 6	14 29.4	- 8 32 42	+0.7104	.5470	+0.031	-9.5166	.9752
22	ϵ^1 Sagittarii	4	- 5	-64	16 28.2	- 6 37 42	-0.4357	.5469	+0.062	-9.4921	.9780
22	ϵ^2 Sagittarii	5½	+23	-31	16 32.0	- 6 33 59	+0.0751	0.5469	+0.063	-9.5026	9.9768

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1868.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of δ .	At Washington Mean Time of Conjunction.					
			North-ern.	South-ern.		<i>H</i>	<i>Y</i>	<i>p'</i>	<i>q'</i>	Log sin <i>D</i>	Log cos <i>D</i>
Jan.	25 B.A.C. 7487	6½	+63	-4	9 51.7	+ 8 43 28	+0.5461	0.5357	+1.255	-9.3857	9.9868
	25 1 Capricor.	5½	-27	-90	16 4.8	- 9 14 46	-0.9716	.5346	+1.321	-9.3169	.9904
	26 2 Aquarii	6	+39	-26	4 16.2	+ 2 34 34	+0.1574	.5325	+1.440	-9.2985	.9912
	26 2 Aquarii	6	+78	+23	4 18.8	+ 2 37 5	+0.9847	.5325	+1.440	-9.3254	.9900
	26 B.A.C. 7774	6	-72	-90	7 32.3	+ 5 44 49	-1.3228	.5319	+1.471	-9.2265	.9937
	27 1 Aquarii	4	+30	-38	1 52.1	- 0 28 12	-0.0482	.5294	+1.613	-9.1585	.9954
	27 JUPITER.		+77	+1	3 30.1	+ 1 6 49	+0.6473	.5202	+1.586	-9.1785	.9950
	27 81 Aquarii	6	+40	-28	6 23.8	+ 3 55 24	+0.1249	.5291	+1.643	-9.1309	.9960
	27 82 Aquarii	6	+16	-54	6 59.4	+ 4 29 56	-0.3119	.5239	+1.645	-9.1030	.9965
	27 11 Aquarii	6	+82	+35	8 19.5	+ 5 47 39	+1.1416	.5288	+1.653	-9.1649	.9953
	27 11 Aquarii	7	+82	+44	8 24.5	+ 5 52 34	+1.2215	.5288	+1.655	-9.1690	.9952
	27 11 Aquarii	7½	+82	+60	9 23.0	+ 6 49 19	+1.3158	.5288	+1.661	-9.1649	.9953
	27 9 Aquarii	4½	+41	-28	13 3.7	+10 23 25	+0.1273	.5266	+1.681	-9.0709	.9970
	27 96 Aquarii	5½	+10	-62	15 40.3	-11 4 36	-0.4341	.5285	+1.696	-9.0080	.9977
	27 B.A.C. 8134	6½	-8	-90	16 42.1	-10 4 37	-0.7523	.5282	+1.701	-8.9733	.9981
	28 20 Piscium	6	+10	-63	6 23.9	+ 3 12 52	-0.4512	.5284	+1.760	-8.7853	.9992
	28 24 Piscium	6½	+61	-11	8 58.0	+ 5 42 23	+0.4287	.5286	+1.768	-8.8314	.9990
	28 29 Piscium	5½	+87	+31	13 32.7	+10 8 55	+1.1038	.5288	+1.782	-8.8172	.9991
	29 10 Ceti	6	+43	-27	2 14.2	- 1 32 21	+0.1463	.5301	+1.805	-8.1356	0.0000
	30 1 Piscium	6	+90	+11	4 1.0	- 0 32 23	+0.8147	.5364	+1.790	+8.7066	9.9994
	30 B.A.C. 408	6½	+37	-32	6 26.8	+ 1 48 53	+0.0432	.5374	+1.784	+8.8484	.9989
	30 1 Piscium	4½	-11	-35	10 5.7	+ 9 21 1	-0.8153	.5385	+1.774	+8.9783	.9980
	30 1 Piscium	4½	+90	+14	15 38.4	+10 43 18	+0.8472	.5409	+1.754	+8.9241	.9985
	31 64 Ceti	6½	+35	-32	6 2.6	+ 0 40 4	+0.0080	.5474	+1.683	+9.1408	.9958
	31 1 Ceti	4½	+26	-41	6 48.9	+ 1 24 50	-0.1524	.5479	+1.678	+9.1555	.9955
	31 B.A.C. 741	6½	+25	-43	12 14.2	+ 6 39 39	-0.1863	.5507	+1.644	+9.1997	.9945
	31 1 Arietis	5½	-32	-80	12 22.4	+ 6 47 34	-1.1046	.5509	+1.641	+9.2400	.9933
	31 B.A.C. 755	6	-17	-80	13 17.2	+ 7 40 32	-0.9095	.5511	+1.636	+9.2382	.9934
	31 B.A.C. 830	6	+38	-29	20 36.5	- 9 14 37	+0.0515	.5555	+1.578	+9.2471	.9931
	31 1 Ceti	4	+90	+19	21 44.0	- 8 9 23	+0.8772	.5572	+1.569	+9.2200	.9939
Feb.	1 B.A.C. 987	6½	+11	-57	9 43.6	+ 3 25 53	-0.4394	.5638	+1.455	+9.3368	.9895
	1 1 Tauri	4	+90	+20	18 23.7	+11 47 56	+0.8620	.5698	+1.355	+9.3346	.9816
	2 Wei.III. 1085	8½	+63	-3	8 46.7	+ 1 40 6	+0.4338	.5793	+1.163	+9.4032	.9856
	2 Wei.III. 1108	8	+90	+39	9 20.7	+ 2 12 53	+1.0812	.5797	+1.154	+9.3813	.9870
	2 Wei.III. 1127	8	+90	+38	9 42.4	+ 2 33 48	+1.1771	.5799	+1.150	+9.3848	.9868
	2 Wei.III. 1133	9	+90	+53	9 46.9	+ 2 38 7	+1.2123	.5799	+1.148	+9.3840	.9869
	2 Wei.III. 1135	9½	+90	+54	9 48.1	+ 2 39 12	+1.2198	.5799	+1.147	+9.3838	.9869
	2 Wei.IV. 24	9	+70	0	11 31.0	+ 4 18 24	+0.5131	.5810	+1.123	+9.4098	.9852
	2 Lal. 7753	7½	+23	-38	11 35.9	+ 4 23 7	-0.2027	.5810	+1.122	+9.4206	.9837
	2 B.A.C. 1281	7	-18	-74	11 42.0	+ 4 28 59	-0.9066	.5811	+1.120	+9.4482	.9822
	2 Ramk. 1103	7	+43	-18	11 42.6	+ 4 29 34	+0.1348	.5811	+1.120	+9.4208	.9844
	2 Ramk. 1108	9	+90	+25	12 9.6	+ 4 55 34	+0.8882	.5814	+1.114	+9.4012	.9858
	2 Ramk. 1114	9	+90	+42	12 21.8	+ 5 7 19	+1.1048	.5820	+1.112	+9.3924	.9863
	2 Ramk. 1123	8½	+90	+34	12 58.4	+ 5 42 35	+1.0141	.5823	+1.102	+9.4002	.9858
	2 48 Tauri	6	+75	+6	13 38.9	+ 6 21 36	+0.5671	.5828	+1.091	+9.4148	.9848
	2 Ramk. 1136	6	+23	-38	14 4.6	+ 6 46 21	-0.2194	.5830	+1.085	+9.4372	.9831
	2 1 Tauri	4	+69	+2	15 19.9	+ 7 58 50	+0.5048	.5830	+1.064	+9.4215	.9843
	2 55 Tauri	7	+12	-50	15 21.8	+ 8 0 42	-0.4042	.5837	+1.062	+9.4456	.9824
	2 58 Tauri	6	+90	+40	15 41.0	+ 8 19 8	+1.0822	.5839	+1.059	+9.4065	.9854
	2 Ramk. 1163	8	-1	-67	16 2.6	+ 8 39 58	-0.6249	.5841	+1.054	+9.4530	.9818
	2 Wei. IV. 286	8	+90	+53	16 34.4	+ 9 10 37	+1.2081	.5844	+1.045	+9.4056	.9855
	2 63 Tauri	6	+6	-58	16 49.4	+ 9 25 3	-0.5201	.5846	+1.041	+9.4524	.9818
	2 B.A.C. 1351	6½	+14	-47	16 50.9	+ 9 26 28	-0.3668	.5846	+1.040	+9.4486	.9821
	2 11 Tauri	6	-42	-73	17 5.5	+ 9 40 32	-1.1714	.5847	+1.037	+9.4692	.9803
	2 Lal. 8249	7½	-11	-73	17 12.6	+ 9 47 20	-0.7899	0.5848	+1.035	+9.4602	9.9811

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF
PLANETS AND STARS BY THE MOON, FOR THE YEAR 1868.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Wash- ington Mean Time of C.	At Washington Mean Time of Conjunction.					
			North- ern.	South- ern.		H	Y	p'	q'	Log sin D	Log cos D
Feb. 2	Lal. 8256	8	+ 2	-63	h m	h m s	-0.5882	0.5849	+1.034	+9.4553	9.9816
	70 Tauri	7	+62	- 2	17 15.1	+ 9 49 49	.5853	.5853	+1.029	+9.4305	.9836
2	Lal. 8311	8	+90	+24	17 45.6	+10 19 11	+0.4221	.5855	+1.023	+9.4192	.9845
2	Rumk. 1188	6½	+90	+24	17 57.7	+10 30 48	+0.8630	.5855	+1.022	+9.4191	.9845
2	Rumk. 1189	6½	+ 8	-54	17 57.9	+10 30 58	+0.8644	.5855	+1.021	+9.4546	.9816
2	71 Tauri	6	+90	+19	18 3.9	+10 36 47	-0.4772	.5855	+1.021	+9.4546	.9816
2	Rumk. 1192	6	-10	-73	18 4.0	+10 36 54	+0.7793	.5855	+1.021	+9.4218	.9843
2	Rumk. 1196	6	+90	+27	18 6.8	+10 39 35	-0.7782	.5856	+1.020	+9.4622	.9809
2	Rumk. 1200	6	+90	+24	18 22.8	+10 54 58	+0.9068	.5858	+1.015	+9.4191	.9846
2	Rumk. 1203	6	+90	+24	18 35.2	+11 6 55	+0.8570	.5859	+1.012	+9.4281	.9843
2	Rumk. 1203	6	+45	-16	18 53.2	+11 24 16	+0.1624	.5861	+1.007	+9.4404	.9828
2	75 Tauri	6	+41	-19	18 55.8	+11 26 44	+0.1081	.5862	+1.007	+9.4419	.9827
2	61 Tauri	4½	+70	+ 4	18 59.2	+11 29 59	+0.5152	.5863	+1.005	+9.4314	.9836
2	62 Tauri	4½	+80	+ 9	19 1.6	+11 32 18	+0.6121	.5863	+1.005	+9.4289	.9837
2	Rumk. 1210	6	+55	- 7	19 9.3	+11 39 42	+0.3304	.5864	+1.002	+9.4367	.9832
2	Rumk. 1212	6	-31	-73	19 16.3	+11 46 26	-1.0666	.5865	+1.000	+9.4721	.9800
2	80 Tauri	6	+90	+27	19 38.7	-11 51 56	+0.9661	.5867	+0.995	+9.4226	.9842
2	B.A.C. 1391	5	+57	- 5	19 48.4	-11 42 41	+0.3556	.5868	+0.992	+9.4377	.9830
2	81 Tauri	5½	+90	+26	19 51.3	-11 39 48	+0.8702	.5869	+0.991	+9.4241	.9841
2	B.A.C. 1394	7	+61	- 2	19 54.0	-11 37 14	+0.4052	.5870	+0.988	+9.4367	.9831
2	Rumk. 1227	7	+90	+19	20 8.9	-11 22 56	+0.7711	.5870	+0.987	+9.4276	.9838
2	85 Tauri	6	+90	+20	20 21.2	-11 11 5	+0.7532	.5872	+0.982	+9.4286	.9838
2	Rumk. 1232	6	+36	-24	20 33.1	-10 59 35	+0.0125	.5874	+0.978	+9.4485	.9821
2	Rumk. 1233	6	-56	-73	20 39.1	-10 53 53	-1.2505	.5875	+0.977	+9.4799	.9792
2	Rumk. 1235	6	+82	+10	20 45.0	-10 48 9	+0.6323	.5876	+0.975	+9.4329	.9834
2	B.A.C. 1406	7	+56	- 6	21 5.0	-10 28 57	+0.3398	.5878	+0.970	+9.4414	.9827
2	Rumk. 1238	10	+46	-14	21 25.2	-10 9 26	+0.1808	.5880	+0.965	+9.4463	.9823
2	Lal. 8599	9	-32	-73	21 29.2	-10 5 37	-1.0725	.5880	+0.965	+9.4774	.9795
2	Wei. IV. 549	8½	+90	+54	21 29.5	-10 5 21	+1.2070	.5880	+0.964	+9.4193	.9845
2	Lal. 8610	8	+18	-42	21 37.3	- 9 57 52	-0.2984	.5881	+0.963	+9.4589	.9812
2	Lal. 8613	8	+ 7	-56	21 38.6	- 9 56 37	-0.5015	.5881	+0.962	+9.4640	.9808
2	α Tauri	1	+49	-12	22 1.2	- 9 34 50	+0.2285	.5884	+0.955	+9.4466	.9823
2	89 Tauri	7	+90	+21	22 57.1	- 8 41 0	+0.7982	.5882	+0.937	+9.4340	.9833
2	α¹ Tauri	5½	+90	+40	23 22.2	- 8 16 53	+1.0695	.5895	+0.931	+9.4278	.9838
2	α² Tauri	5½	+90	+31	23 24.8	- 8 14 19	+0.9552	.5896	+0.930	+9.4310	.9836
2	Rumk. 1241	6	+58	- 4	23 39.5	- 8 0 13	+0.3638	.5897	+0.926	+9.4471	.9823
2	Rumk. 1243	8	+60	- 3	23 52.2	- 7 47 58	+0.3893	.5899	+0.922	+9.4469	.9823
3	Rumk. 1246	7	+ 8	-54	0 19.1	- 7 22 9	-0.4821	.5903	+0.914	+9.4617	.9802
3	Rumk. 1247	7	+49	-11	0 19.4	- 7 21 51	+0.2330	.5903	+0.914	+9.4520	.9818
3	Rumk. 1254	7	+52	- 9	0 35.0	- 7 6 47	+0.2798	.5905	+0.909	+9.4514	.9819
3	Rumk. 1255	7	+90	+35	0 36.2	- 7 5 40	+1.0016	.5905	+0.909	+9.4327	.9835
3	Lal. 8852	9½	+16	-43	0 54.3	- 6 48 13	-0.3321	.5907	+0.905	+9.4673	.9805
3	Rumk. 1263	9½	+90	+34	1 31.7	- 6 12 13	+0.9888	.5912	+0.894	+9.4352	.9832
3	Rumk. 1268	8½	+90	+50	2 6.9	- 5 38 26	+1.1657	.5914	+0.883	+9.4319	.9835
3	Rumk. 1283	7	+72	+ 6	3 14.9	- 4 32 56	+0.5404	.5921	+0.862	+9.4507	.9820
3	Rumk. 1294	7	+90	+39	4 7.5	- 3 42 26	+1.0402	.5925	+0.847	+9.4398	.9829
3	Rumk. 1299	7½	+11	-49	4 31.4	- 3 19 24	-0.4249	.5928	+0.840	+9.4772	.9795
3	Rumk. 1300	7	+14	-45	4 33.7	- 3 17 11	-0.3655	.5928	+0.839	+9.4759	.9796
3	B.A.C. 1526	6	+53	- 7	6 46.7	- 1 9 16	+0.2849	.5943	+0.796	+9.4645	.9807
3	η Tauri	5½	-22	-72	10 46.7	+ 2 41 28	-0.9419	.5968	+0.724	+9.5006	.9770
3	111 Tauri	6	+90	+19	17 35.8	+ 9 14 39	+0.7186	.6008	+0.690	+9.4722	.9800
3	115 Tauri	5½	+47	-10	18 41.1	+10 17 21	+0.1934	.6013	+0.669	+9.4863	.9786
3	117 Tauri	6	+90	+34	19 2.5	+10 37 53	+0.9337	.6014	+0.663	+9.4690	.9803
3	119 Tauri	5½	+15	-41	20 39.9	-11 48 30	-0.3457	.6024	+0.628	+9.5013	.9770
3	B.A.C. 1728	6½	+90	+57	20 42.6	-11 45 57	+1.1948	.6024	+0.627	+9.4648	.9807
3	120 Tauri	6	+20	-36	21 11.1	-11 18 33	-0.2686	0.6026	+0.620	+9.5001	9.9771

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1868.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of δ .	At Washington Mean Time of Conjunction.						
			North- ern.	South- ern.		H	Y	p'	q'	Log sin D	Log cos D	
Feb.	4 130 Tauri	6	+90	+23	2 39.6	— 6 3 8	+0.7497	0.6055	+0.0404	+9.4823	9.9790	
	4 χ^2 Orionis	6	—45	—71	5 32.6	— 3 17 4	—1.1806	.6072	+0.0341	+9.5281	.9737	
	4 B.A.C. 1930	6½	+90	+39	8 41.8	— 0 15 26	+0.9656	.6083	+0.0274	+9.4820	.9790	
	4 χ^3 Orionis	5	—30	—71	8 50.8	— 0 6 46	—1.0450	.6084	+0.0272	+9.5275	.9738	
	4 68 Orionis	6	—35	—70	12 9.3	+ 3 3 41	—1.0922	.6098	+0.0201	+9.5301	.9735	
	4 71 Orionis	5½	+ 9	—45	13 15.8	+ 4 7 31	—0.4561	.6102	+0.0177	+9.5169	.9751	
	4 26 Geminor	5½	+90	+44	23 50.8	— 9 43 22	+1.0151	.6136	—0.0062	+9.4845	.9788	
	5 B.A.C. 2432	6½	+28	—24	15 17.3	+ 5 4 56	—0.0952	.6163	—0.0410	+9.5019	.9769	
	5 γ Geminor	6	+44	—12	21 30.6	+11 2 51	+0.1464	.6162	—0.0554	+9.4893	.9783	
	6 η Geminor	5½	—14	—71	0 1.1	—10 32 53	—0.8396	.6160	—0.0606	+9.5088	.9761	
	6 3 Cancri	6	+31	—26	5 36.4	— 5 11 26	—0.0657	.6157	—0.0731	+9.4821	.9790	
	6 5 Cancri	6	+90	+20	5 53.6	— 4 54 54	+0.7391	.6157	—0.0739	+9.4613	.9810	
	6 B.A.C. 2731	6½	+30	—27	9 7.3	— 1 49 11	—0.0825	.6153	—0.0803	+9.4757	.9797	
	6 ζ^1 Cancri	4½	—10	—72	9 56.6	— 1 1 55	—0.7784	.6152	—0.0821	+9.4909	.9781	
	6 ζ^2 Cancri	7½	—10	—72	9 56.7	— 1 1 50	—0.7757	.6152	—0.0821	+9.4909	.9781	
	6 δ^2 Cancri	6	— 4	—70	15 10.2	+ 3 58 51	—0.6828	.6139	—0.0928	+9.4776	.9795	
	7 54 Cancri	6½	+31	—30	0 52.7	—10 42 20	—0.0723	.6109	—0.1120	+9.4359	.9832	
	7 ϵ^1 Cancri	6	+16	—46	3 16.7	— 8 24 14	—0.3357	.6104	—0.1162	+9.4357	.9832	
	7 ϵ^2 Cancri	6	+ 1	—65	3 24.3	— 8 16 56	—0.6042	.6102	—0.1169	+9.4425	.9827	
	7 π^1 Cancri	6½	— 8	—75	9 10.3	— 2 44 52	—0.7586	.6079	—0.1267	+9.4275	.9839	
	7 π^2 Cancri	6	—15	—75	10 17.5	— 1 40 22	—0.8638	.6073	—0.1286	+9.4265	.9839	
	7 18 Leonis	6	+63	— 5	22 37.9	+10 10 50	+0.4345	.6016	—0.1482	+9.3324	.9897	
	7 B.A.C. 3345	6	+90	+12	23 6.2	+10 37 59	+0.7360	.6013	—0.1487	+9.3191	.9903	
	8 ν Leonis	5	—19	—77	3 21.7	— 9 16 27	—0.9264	.5992	—0.1545	+9.3544	.9886	
	8 A Leonis	5	+90	+17	7 17.8	— 5 29 35	+0.8447	.5972	—0.1595	+9.2663	.9925	
	8 α Leonis	1½	—34	—78	7 28.5	— 5 19 16	—1.1202	.5968	—0.1600	+9.3390	.9894	
	8 B.A.C. 3538	6½	+90	+20	13 7.9	+ 0 7 6	+0.8956	.5940	—0.1664	+9.2232	.9938	
	8 44 Leonis	6	+90	+17	14 21.9	+ 1 18 20	+0.8600	.5929	—0.1679	+9.2154	.9941	
	8 B.A.C. 3562	6½	+90	+17	14 30.4	+ 1 26 32	+0.8472	.5929	—0.1680	+9.2149	.9941	
	8 45 Leonis	6	+20	—47	15 20.4	+ 2 14 37	—0.2704	.5926	—0.1687	+9.2578	.9928	
	8 ϵ Leonis	4	+24	—43	17 28.1	+ 4 17 27	—0.1888	.5911	—0.1711	+9.2389	.9938	
	8 49 Leonis	6	+53	—15	18 23.8	+ 5 11 3	+0.2980	.5909	—0.1720	+9.2097	.9942	
	9 ϵ Leonis	5	+90	+18	5 7.8	— 8 28 58	+0.9007	.5849	—0.1810	+9.0738	.9969	
	9 ζ Leonis	5	— 2	—79	6 56.5	— 6 44 17	—0.6584	.5840	—0.1822	+9.1460	.9957	
	9 σ Leonis	4	0	—77	13 47.0	— 0 8 43	—0.6321	.5802	—0.1863	+9.0701	.9970	
	10 β Virginis	3½	+90	+42	2 31.5	—11 51 40	+1.2075	.5735	—0.1911	+8.6407	.9996	
	10 η Virginis	6	+ 6	—70	10 55.7	— 3 45 8	—0.5349	.5692	—0.1924	+8.6628	9.9995	
	10 γ Virginis	3½	+90	+40	15 28.5	+ 0 38 9	+1.1893	.5669	—0.1924	+7.0585	0.0000	
	11 γ Virginis, pr.	2½	+42	—28	1 16.8	+10 6 14	+0.1155	.5631	—0.1915	—8.1034	0.0000	
	11 B.A.C. 4277	6	+39	—31	2 7.7	+10 55 23	+0.0779	.5627	—0.1912	—8.1708	9.9999	
	11 38 Virginis	6	+88	+51	6 28.9	— 8 52 3	+1.2798	.5608	—0.1900	—8.6945	.9995	
	11 k Virginis	6	+87	+23	9 25.1	— 6 2 2	+0.9929	.5596	—0.1891	—8.7329	.9994	
	11 46 Virginis	6½	+64	—10	9 50.9	— 5 37 2	+0.4599	.5596	—0.1890	—8.6663	.9995	
	11 48 Virginis	6	+65	— 9	11 21.6	+ 4 9 23	+0.4771	.5591	—0.1884	—8.7119	.9994	
	11 65 Virginis	6	+42	—28	20 17.1	+ 4 28 7	+0.1324	.5562	—0.1845	—8.8681	.9988	
	11 66 Virginis	6	+51	—20	20 50.6	+ 5 0 35	+0.2773	.5559	—0.1841	—8.8921	.9987	
	12 β Virginis	5	+85	+ 9	0 17.2	+ 8 20 19	+0.7861	.5550	—0.1823	—8.9874	.9979	
	12 80 Virginis	6	+13	—58	1 51.7	+ 9 51 37	—0.3804	.5544	—0.1813	—8.9157	.9985	
	12 94 Virginis	6	+75	+ 8	16 17.6	— 0 10 54	+0.7584	.5511	—0.1713	—9.1574	.9955	
	12 95 Virginis	6	+82	+38	16 29.7	+ 0 0 46	+1.1655	.5511	—0.1709	—9.1788	.9950	
	13 ξ^1 Libræ	6	+54	—14	14 59.8	— 2 12 54	+0.3777	.5476	—0.1500	—9.2943	.9914	
	13 ξ^2 Libræ	6	+14	—54	16 8.1	— 1 6 44	—0.3090	.5474	—0.1488	—9.2757	.9921	
	13 18 Libræ, pr.	6½	—11	—90	17 9.6	— 0 7 15	—0.7391	.5473	—0.1477	—9.2651	.9925	
	14 B.A.C. 5070	6	—33	—90	5 1.9	+11 22 7	—1.0476	.5465	—0.1342	—9.3141	.9906	
	14 γ Libræ	4½	+76	+15	10 32.3	— 7 18 7	+0.8618	0.5461	—0.1274	—9.3940	9.9862	

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF
PLANETS AND STARS BY THE MOON, FOR THE YEAR 1868.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of δ .	At Washington Mean Time of Conjunction.					
			North- ern.	South- ern.		H	Y	p'	q'	Log sin D	Log cos D
Feb. 14	48 Libræ	4½	-27	-90	21 22.9	+ 3 11 40	-0.9326	0.5459	-1.134	-9.3805	9.9671
15	φ Ophiuchi	5	+29	-30	13 5.1	- 5 36 20	+0.0816	.5460	-.0920	-9.4487	.9621
15	24 Scorpii	5	+73	+19	18 2.6	- 0 48 25	+0.9114	.5460	-.0848	-9.4777	.9795
16	B.A.C. 5695	6	-11	-80	0 58.4	+ 5 54 6	-0.6156	.5461	-.0746	-9.4556	.9615
16	B.A.C. 5771	6½	+16	-41	6 48.0	+11 32 29	-0.1026	.5461	-.0658	-9.4765	.9796
16	B.A.C. 5839	6½	+ 7	-50	12 21.9	- 7 4 20	-0.2456	.5463	-.0571	-9.4809	.9791
17	B.A.C. 6060	6½	+34	-19	5 34.6	+ 9 35 16	+0.2767	.5465	-.0302	-9.5076	.9762
17	B.A.C. 6267	6	-43	-90	20 57.6	+ 0 28 44	-0.9952	.5465	-.0058	-9.4871	.9785
17	B.A.C. 6287	6	+17	-33	22 0.8	+ 1 29 54	+0.0311	.5464	-.0042	-9.5084	.9762
17	B.A.C. 6292	6	+29	-22	22 33.6	+ 2 1 38	+0.2297	.5464	-.0031	-9.5124	.9757
17	B.A.C. 6293	6½	-11	-67	22 36.6	+ 2 4 34	-0.4792	.5464	-.0031	-9.4980	.9773
17	B.A.C. 6294	6	- 2	-55	22 37.3	+ 2 5 15	-0.3234	.5464	-.0030	-9.5012	.9770
18	δ Sagittarii	5	+71	+10	20 52.0	- 0 22 41	+0.7709	.5453	+0.0321	-9.5166	.9752
18	ϕ^1 Sagittarii	4	- 2	-59	22 50.9	+ 1 32 30	-0.3751	.5451	+0.0352	-9.4921	.9780
18	ϕ^2 Sagittarii	5½	+26	-27	22 54.8	+ 1 36 13	+0.1350	.5451	+0.0353	-9.5026	.9768
19	B.A.C. 6658	6	+39	-16	1 56.4	+ 4 32 4	+0.3303	.5449	+0.0399	-9.5042	.9766
20	B.A.C. 7063	6	-53	-90	8 46.3	+10 23 47	-1.1970	.5416	+0.0855	-9.4267	.9839
20	B.A.C. 7097	6	+67	+ 1	10 55.6	-11 30 54	+0.6375	.5414	+0.0884	-9.4654	.9806
20	τ^1 Capricor	6	-21	-90	11 51.3	-10 36 56	-0.8056	.5411	+0.0897	-9.4297	.9837
20	τ^2 Capricor	5	-29	-90	12 48.6	- 9 41 28	-0.9266	.5410	+0.0910	-9.4246	.9841
20	B.A.C. 7145	6½	+51	-10	13 25.0	- 9 6 9	+0.4338	.5409	+0.0920	-9.4557	.9815
21	18 Aquarii	6	-14	-90	11 9.3	+11 57 49	-0.7544	.5379	+0.1192	-9.3663	.9879
24	20 Piscium	6	+ 8	-66	11 11.7	+ 9 48 3	-0.4791	.5320	+0.1767	-8.7853	9.9992
24	24 Piscium	6	+59	-13	14 44.4	-10 44 15	+0.3980	.5321	+0.1777	-8.8314	0.0000
24	29 Piscium	5½	+87	-29	19 16.7	- 6 19 39	+1.0703	.5322	+0.1790	-8.8172	9.9991
26	ζ Piscium	6	+90	+ 9	9 32.1	+ 6 46 0	+0.7752	.5384	+0.1794	+8.7066	.9994
26	B.A.C. 408	6½	+35	-34	11 57.6	+ 9 7 4	+0.0021	.5389	+0.1789	+8.8484	.9989
26	μ Piscium	4½	-14	-85	15 36.4	-11 20 54	-0.8592	.5399	+0.1776	+8.9783	.9980
26	ν Piscium	4½	+90	+11	21 9.3	- 5 58 22	+0.8076	.5415	+0.1758	+8.9241	.9985
27	64 Ceti	6½	+33	-35	11 37.1	+ 8 1 54	-0.0345	.5468	+0.1681	+9.1407	.9958
27	ξ^1 Ceti	4½	+24	-44	12 23.6	+ 8 47 5	-0.1958	.5473	+0.1676	+9.1554	.9955
27	B.A.C. 741	6½	+22	-46	17 51.6	- 9 55 38	-0.2297	.5494	+0.1639	+9.1997	.9945
27	ξ Arietis	5½	-37	-80	17 59.6	- 9 47 50	-1.1545	.5494	+0.1638	+9.2400	.9933
27	B.A.C. 755	6	-21	-80	18 55.0	- 8 54 13	-0.9574	.5497	+0.1631	+9.2382	.9934
28	B.A.C. 830	6	+36	-31	2 19.1	- 1 44 41	+0.0100	.5528	+0.1573	+9.2471	.9931
28	μ Ceti	4	+90	+16	3 27.4	- 0 38 37	+0.8420	.5537	+0.1561	+9.2200	.9939
28	B.A.C. 987	6½	+ 9	-59	15 27.6	+10 57 14	-0.4668	.5596	+0.1444	+9.3368	.9895
29	ζ Tauri	4	+90	+18	0 27.5	- 4 20 49	+0.8320	.5640	+0.1343	+9.3346	.9896
29	Wei.III.1085	8½	+61	- 4	15 10.6	+ 9 51 32	+0.4033	.5720	+0.1152	+9.4032	.9856
29	Wei.III.1108	8	+90	+55	15 45.5	+10 25 12	+1.2325	.5724	+0.1142	+9.3813	.9870
29	Wei.III.1127	8	+90	+46	16 7.8	+10 46 41	+1.1566	.5725	+0.1138	+9.3848	.9868
29	Wei.III.1133	9	+90	+50	16 12.4	+10 51 7	+1.1923	.5725	+0.1137	+9.3840	.9869
29	Wei.III.1135	9½	+90	+51	16 13.6	+10 52 15	+1.2001	.5728	+0.1137	+9.3838	.9869
29	Wei. IV. 24	9	+67	0	17 59.3	-11 25 50	+0.4844	.5736	+0.1110	+9.4098	.9852
29	Lal. 7753	7½	+21	-40	18 4.3	-11 20 58	-0.2411	.5736	+0.1109	+9.4296	.9837
29	B.A.C. 1281	7	-22	-74	18 7.1	-11 18 18	-0.9609	.5736	+0.1108	+9.4482	.9822
29	Rumk. 1103	7	+41	-20	18 11.2	-11 14 20	+0.1010	.5737	+0.1107	+9.4208	.9844
29	Rumk. 1108	9	+90	+23	18 38.9	-10 47 36	+0.8648	.5739	+0.1100	+9.4012	.9858
29	Rumk. 1114	9	+90	+51	18 51.5	-10 35 29	+1.1970	.5740	+0.1097	+9.3924	.9863
29	Rumk. 1123	8½	+90	+32	19 29.0	- 9 59 16	+0.9927	.5744	+0.1088	+9.4002	.9858
29	Rumk. 1126	8½	+90	+66	19 36.5	- 9 52 7	+1.2835	.5744	+0.1086	+9.3923	.9863
29	48 Tauri	6	+72	+ 4	20 10.7	- 9 19 8	+0.5398	.5747	+0.1077	+9.4148	.9848
29	Rumk. 1136	6	+20	-40	20 37.0	- 8 53 42	-0.2575	.5750	+0.1070	+9.4372	.9831
29	γ Tauri	4	+67	+ 1	21 54.4	- 7 39 4	+0.4772	.5756	+0.1051	+9.4215	.9843
29	55 Tauri	7	+10	-53	21 56.4	- 7 37 8	-0.4446	0.5757	+0.1051	+9.4456	9.9824

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1868.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of δ .	At Washington Mean Time of Conjunction.					
			North- ern.	South- ern.		<i>H</i>	<i>Y</i>	<i>p'</i>	<i>q'</i>	Log sin <i>D</i>	Log cos <i>D</i>
Feb. 29	58 Tauri	6	+90	+38	22 16.1	h m s - 7 18 8	+1.0624	0.5759	+1.046	+9.4065	9.9854
29	Rumk. 1163	8	- 3	-70	22 38.4	- 6 56 44	-0.6683	.5761	+1.040	+9.4530	.9818
29	Wei. IV. 236	8	+90	+51	23 11.1	- 6 25 10	+1.1907	.5766	+1.031	+9.4056	.9855
29	63 Tauri	6	+ 3	-61	23 26.5	- 6 10 29	-0.5621	.5767	+1.027	+9.4524	.9818
29	B.A.C. 1351	6½	+12	-50	23 28.0	- 6 8 50	-0.4065	.5768	+1.027	+9.4486	.9821
29	♂ Tauri	6	-49	-73	23 43.1	- 5 54 21	-1.2226	.5769	+1.023	+9.4692	.9803
29	Lal. 8249	7½	-14	-73	23 50.4	- 5 47 19	-0.8354	.5769	+1.021	+9.4602	.9811
29	Lal. 8256	8	- 1	-67	23 53.0	- 5 44 46	-0.6307	.5770	+1.020	+9.4553	.9816
Mar. 1	70 Tauri	7	+60	- 3	0 24.4	- 5 14 32	+0.3936	.5771	+1.012	+9.4305	.9836
1	Lal. 8311	8	+90	+23	0 36.8	- 5 2 34	+0.8408	.5772	+1.009	+9.4192	.9845
1	Rumk. 1188	6½	+90	+23	0 37.0	- 5 2 24	+0.8422	.5772	+1.009	+9.4192	.9845
1	Rumk. 1189	6	+ 6	-58	0 43.2	- 4 56 23	-0.5181	.5772	+1.007	+9.4546	.9816
1	71 Tauri	6	+90	+17	0 43.3	- 4 56 16	+0.7561	.5772	+1.007	+9.4217	.9843
1	Rumk. 1192	6	-13	-73	0 46.2	- 4 53 30	-0.2232	.5773	+1.008	+9.4622	.9809
1	Rumk. 1198	6	+90	+26	1 2.7	- 4 37 38	+0.8857	.5774	+1.002	+9.4191	.9845
1	Rumk. 1200	6	+90	+22	1 15.4	- 4 25 20	+0.8350	.5774	+0.998	+9.4211	.9843
1	Rumk. 1203	6	+43	-18	1 34.0	- 4 7 27	+0.1307	.5776	+0.993	+9.4404	.9828
1	75 Tauri	6	+39	-21	1 36.6	- 4 4 55	+0.0757	.5777	+0.993	+9.4419	.9827
1	♂ Tauri	4½	+68	+ 2	1 40.1	- 4 1 33	+0.4889	.5777	+0.993	+9.4314	.9836
1	♂ Tauri	4½	+77	+ 7	1 42.6	- 3 59 10	+0.5871	.5777	+0.991	+9.4239	.9837
1	Rumk. 1210	6	+54	- 8	1 50.5	- 3 51 32	+0.3013	.5778	+0.989	+9.4367	.9831
1	Rumk. 1212	6	-36	-73	1 57.7	- 3 44 35	-1.1158	.5779	+0.987	+9.4721	.9800
1	80 Tauri	6	+90	+26	2 20.8	- 3 22 17	+0.8853	.5782	+0.981	+9.4226	.9842
1	B.A.C. 1391	5	+55	- 7	2 30.7	- 3 12 45	+0.3270	.5783	+0.978	+9.4377	.9830
1	81 Tauri	5½	+90	+24	2 23.7	- 3 9 50	+0.8488	.5784	+0.978	+9.4241	.9841
1	B.A.C. 1394	7	+59	- 9	2 36.5	- 3 7 13	+0.3772	.5784	+0.977	+9.4367	.9831
1	Rumk. 1227	7	+90	+17	2 51.8	- 2 52 26	+0.7487	.5786	+0.973	+9.4276	.9838
1	85 Tauri	6	+90	+16	3 4.5	- 2 40 12	+0.7306	.5787	+0.970	+9.4286	.9838
1	Rumk. 1232	6	+34	-26	3 16.8	- 2 28 18	-0.0208	.5789	+0.967	+9.4485	.9821
1	Rumk. 1235	6	+79	+ 9	3 29.1	- 2 16 32	+0.6080	.5790	+0.963	+9.4329	.9834
1	B.A.C. 1406	7	+54	- 7	3 49.6	- 1 56 46	+0.3114	.5791	+0.958	+9.4414	.9827
1	Rumk. 1230	10	+44	-16	4 10.5	- 1 36 34	+0.1502	.5792	+0.952	+9.4463	.9823
1	Lal. 8599	9	-37	-73	4 14.6	- 1 32 28	-1.1215	.5793	+0.951	+9.4774	.9795
1	Wei. IV. 549	8½	+90	+52	4 14.9	- 1 32 22	+1.1912	.5793	+0.952	+9.4193	.9845
1	Lal. 8610	8	+16	-44	4 22.9	- 1 24 39	-0.3361	.5793	+0.949	+9.4589	.9812
1	Lal. 8613	8	+ 4	-59	4 24.2	- 1 23 22	-0.5422	.5793	+0.948	+0.4640	.9808
1	♂ Tauri	1	+47	-13	4 47.5	- 1 0 54	+0.1987	.5796	+0.942	+9.4466	.9823
1	89 Tauri	7	+90	+20	5 45.2	- 0 5 22	+0.7770	.5797	+0.926	+9.4340	.9833
1	♂ Tauri	5½	+90	+39	6 11.0	+ 0 19 33	+1.0524	.5802	+0.919	+9.4278	.9838
1	♂ Tauri	5½	+90	+30	6 13.8	+ 0 22 11	+0.9365	.5802	+0.918	+9.4310	.9836
1	Rumk. 1241	8	+56	- 6	6 28.9	+ 0 36 46	+0.3363	.5804	+0.914	+9.4471	.9823
1	Rumk. 1243	8	+58	- 4	6 42.0	+ 0 49 24	+0.3624	.5805	+0.910	+9.4469	.9823
1	Rumk. 1246	7	+ 5	-57	7 9.7	+ 1 16 3	-0.5218	.5808	+0.902	+9.4697	.9802
1	Rumk. 1247	7	+47	-13	7 10.0	+ 1 16 23	+0.2039	.5808	+0.902	+9.4520	.9818
1	Rumk. 1254	7	+50	-10	7 26.1	+ 1 31 55	+0.2514	.5808	+0.898	+9.4514	.9819
1	Rumk. 1255	7	+90	+34	7 27.3	+ 1 33 4	+0.9840	.5809	+0.898	+9.4327	.9835
1	Lal. 8852	9½	+14	-46	7 46.1	+ 1 51 6	-0.3696	.5810	+0.892	+9.4673	.9805
1	Rumk. 1263	9½	+90	+33	8 24.6	+ 2 28 14	+0.9712	.5814	+0.881	+9.4352	.9832
1	Rumk. 1268	8½	+90	+49	9 0.9	+ 3 3 11	+1.1511	.5817	+0.871	+9.4319	.9835
1	Rumk. 1283	7	+70	+ 5	10 11.1	+ 4 10 49	+0.5169	.5823	+0.841	+9.4507	.9820
1	Rumk. 1294	7	+90	+38	11 5.8	+ 5 3 3	+1.0245	.5828	+0.836	+9.4397	.9829
1	Rumk. 1299	7½	+ 9	-52	11 30.0	+ 5 26 51	-0.4629	.5830	+0.829	+9.4772	.9795
1	Rumk. 1300	7	+12	-48	11 32.4	+ 5 29 8	-0.4055	.5830	+0.828	+9.4759	.9796
1	B.A.C. 1526	6	+51	- 8	13 49.8	+ 7 41 26	+0.2586	.5844	+0.788	+9.4645	.9807
1	♂ Tauri	5½	-25	-72	17 57.8	+11 40 11	-0.9870	.5865	+0.715	+9.5006	9.9770

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF
PLANETS AND STARS BY THE MOON, FOR THE YEAR 1868.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of δ .	At Washington Mean Time of Conjunction.					
			North-ern.	South-ern.		H	Y	p'	q'	Log $\sin D$	Log $\cos D$
Mar. 2	111 Tauri	6	+90	+19	1 1.2	— 5 32 19	+0.7036	0.5897	+0.0584	+9.4722	9.9800
	115 Tauri	5½	+45	—11	2 8.8	— 4 27 17	+0.1691	5905	+0.0563	+9.4863	9786
	117 Tauri	6	+90	+33	2 30.9	— 4 6 0	+0.9221	5905	+0.0553	+9.4690	9803
	119 Tauri	5½	+13	—43	4 11.9	— 2 28 52	—0.3788	5913	+0.0523	+9.5013	9770
	B.A.C. 1728	6½	+90	+56	4 14.6	— 2 26 11	+1.1880	5913	+0.0523	+9.4648	9807
2	120 Tauri	6	+18	—38	4 44.2	— 1 57 46	—0.3009	5916	+0.0510	+9.5001	9771
	130 Tauri	6	+90	+22	10 24.7	+ 3 29 45	+0.7371	5942	+0.0397	+9.4823	9790
	♄ Orionis	6	—52	—71	13 24.2	+ 6 22 17	—1.2257	5954	+0.0337	+9.5281	9737
	B.A.C. 1930	6½	+90	+38	16 40.5	+ 9 31 5	+0.9590	5968	+0.0272	+9.4820	9790
	♄ Orionis	5	—34	—71	16 49.9	+ 9 40 6	—1.0874	5968	+0.0269	+9.5275	9738
2	68 Orionis	6	—39	—70	20 15.9	—10 58 47	—1.1342	5979	+0.0200	+9.5301	9735
	71 Orionis	5½	+ 7	—48	21 25.0	— 9 55 33	—0.4867	5984	+0.0172	+9.5169	9751
	26 Geminor	5½	+90	+44	8 24.3	+ 0 37 57	+1.0132	6014	—0.061	+9.4845	9788
	B.A.C. 2432	6½	+28	—25	0 25.8	— 7 58 39	—0.1125	6045	—0.0404	+9.5019	9769
	♄ Geminor	6	+43	—13	6 52.6	— 1 47 9	+0.1347	6048	—0.0539	+9.4893	9763
4	♄ Geminor	5½	—17	—71	9 28.5	+ 0 42 29	—0.8672	6049	—0.0506	+9.5088	9761
	3 Cancri	6	+30	—26	15 15.3	+ 6 15 34	—0.0873	6049	—0.0712	+9.4621	9790
	5 Cancri	6	+90	+19	15 33.2	+ 6 32 40	+0.7384	6048	—0.0722	+9.4613	9810
	B.A.C. 2731	6½	+29	—28	18 53.3	+ 9 44 50	—0.0953	6046	—0.0788	+9.4757	9796
	♄ Cancri	4½	—12	—72	19 44.2	+10 33 46	—0.8011	6046	—0.0806	+9.4909	9781
4	♄ Cancri	7½	—12	—72	19 44.3	+10 33 52	—0.7985	6046	—0.0806	+9.4909	9781
	♄ Cancri	6	— 5	—72	1 7.8	— 8 15 30	—0.7024	6039	—0.0911	+9.4776	9795
	54 Cancri	6½	+30	—30	11 7.4	+ 1 20 23	—0.0812	61.24	—1.101	+9.4359	9832.
	♄ Cancri	6	+15	—46	13 35.2	+ 3 42 22	—0.3472	6023	—1.148	+9.4357	9832
	♄ Cancri	6	0	—67	13 43.0	+ 3 49 52	—0.6192	6019	—1.150	+9.4425	9827
5	♄ Cancri	6½	— 9	—75	19 37.7	+ 9 30 42	—0.7737	6002	—1.253	+9.4275	9839
	♄ Cancri	6	—16	—75	20 46.4	+10 36 47	—0.8798	6001	—1.271	+9.4265	9839
	18 Leonis	6	+63	— 5	9 22.3	— 1 16 38	+0.4338	5962	—1.469	+9.3324	9867
	B.A.C. 3345	6	+90	+12	9 51.0	— 0 48 59	+0.7381	5961	—1.474	+9.3191	9903
	♄ Leonis	5	—20	—77	14 10.8	+ 3 20 48	—0.9378	5947	—1.533	+9.3544	9886
6	A Leonis	5	+90	+18	18 10.2	+ 7 11 8	+0.8468	5932	—1.584	+9.2663	9925
	♄ Leonis	1½	—35	—78	18 21.1	+ 7 21 35	—1.1314	5932	—1.586	+9.3390	9894
	B.A.C. 3538	6½	+90	+20	0 4.6	—11 7 57	+0.8976	5911	—1.655	+9.2232	9938
	44 Leonis	6	+90	+17	1 19.3	— 9 55 59	+0.8620	5907	—1.668	+9.2154	9941
	B.A.C. 3562	6½	+90	+17	1 28.0	— 9 47 41	+0.8490	5905	—1.672	+9.2149	9941
7	45 Leonis	6	+20	—48	2 18.4	— 8 59 9	—0.2745	5902	—1.679	+9.2578	9928
	♄ Leonis	4	+24	—43	4 27.3	— 6 55 6	—0.1925	5891	—1.704	+9.2389	9933
	49 Leonis	6	+53	—16	5 23.4	— 6 1 3	+0.2968	5888	—1.714	+9.2097	9942
	♄ Leonis	5	+90	+18	16 10.8	+ 4 22 16	+0.9003	5847	—1.808	+9.0738	9969
	♄ Leonis	5	— 2	—79	17 59.7	+ 6 7 10	—0.6616	5840	—1.821	+9.1460	9957
8	♄ Leonis	4	0	—77	0 50.2	—11 17 16	—0.6343	5813	—1.867	+9.0701	9970
	89 Leonis	6	+90	+48	6 31.2	— 5 48 41	+1.2491	5790	—1.896	+8.8202	9990
	♄ Virginis	3½	+90	+41	13 31.0	+ 0 56 4	+1.2017	5764	—1.922	+8.6406	9996
	10 Virginis	6	+ 5	—70	21 50.4	+ 8 57 45	+0.5363	5736	—1.939	+8.6627	9995
	♄ Virginis	3½	+90	+39	2 19.8	—10 42 18	+1.1798	5720	—1.942	+7.0529	0000
9	♄ Virginis, pr.	2½	+41	—29	11 59.2	— 1 23 12	+0.1096	5688	—1.935	—8.1039	0000
	B.A.C. 4277	6	+39	—31	12 49.2	— 0 34 54	+0.0718	5687	—1.934	—8.1711	9999
	38 Virginis	6	+88	+48	17 5.8	+ 3 32 47	+1.2633	5671	—1.924	—8.6946	9995
	♄ Virginis	6	+87	+22	18 58.5	+ 5 19 26	+0.9786	5668	—1.919	—8.7330	9994
	46 Virginis	6½	+63	—10	20 23.9	+ 6 44 5	+0.4501	5664	—1.914	—8.6664	9995
9	48 Virginis	6	+64	— 9	21 52.8	+ 8 9 55	+0.4668	5660	—1.909	—8.7120	9994
	65 Virginis	6	+41	—28	6 36.8	— 7 24 3	+0.1231	5638	—1.871	—8.8682	9988
	66 Virginis	6	+50	—20	7 9.6	— 6 52 21	+0.2665	5636	—1.869	—8.8921	9987
	♄ Virginis	5	+85	+ 8	10 31.4	— 3 37 22	+0.7695	5626	—1.849	—8.9874	9979
	80 Virginis	6	+12	—60	12 8.2	— 2 3 56	—0.3999	0.5623	—1.841	—8.9158	9.9985

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1868.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of δ .	At Washington Mean Time of Conjunction.					
			North- ern.	South- ern.		<i>H</i>	<i>Y</i>	<i>p'</i>	<i>q'</i>	Log sin <i>D</i>	Log cos <i>D</i>
Mar. 11	94 Virginis	6	+81	+6	2 7.9	+11 27 28	+0.7381	0.5556	-.1741	-9.1574	9.9955
11	95 Virginis	6	+82	+35	2 19.6	+11 38 48	+1.1405	.5596	-.1740	-9.1789	.9950
12	γ Libræ	6	+52	-15	0 13.4	+8 48 41	+0.3566	.5563	-.1527	-9.2944	.9914
12	ξ Libræ	6	+13	-54	1 19.9	+9 52 59	-0.3198	.5562	-.1515	-9.2757	.9921
12	18 Libræ, pr.	6½	-11	-90	2 19.8	+10 50 52	-0.7482	.5560	-.1503	-9.2652	.9925
12	B.A.C. 5070	6	-34	-90	13 53.0	-1 58 55	-1.0561	.5545	-.1364	-9.3142	.9906
12	γ Libræ	4½	+76	+13	19 14.7	+3 12 13	+0.8362	.5542	-.1297	-9.3941	.9862
12	η Libræ	6	+75	+60	23 12.8	+7 2 24	+1.2894	.5536	-.1244	-9.4200	.9844
13	48 Libræ	4½	-28	-90	5 49.1	-10 34 22	-0.9465	.5532	-.1153	-9.3805	.9871
13	φ Ophiuchi	5	+28	-32	21 9.7	+4 16 3	+0.0533	.5522	-.0933	-9.4487	.9821
14	24 Scorpii	5	+73	+16	2 1.0	+8 57 48	+0.8740	.5518	-.0859	-9.4777	.9795
14	B.A.C. 5695	6	-13	-84	8 48.8	-8 27 47	-0.6393	.5513	-.0754	-9.4556	.9815
14	B.A.C. 5771	6½	+15	-43	14 32.1	-2 55 40	-0.1322	.5509	-.0663	-9.4765	.9796
14	B.A.C. 5839	6½	+6	-52	20 0.5	+2 21 57	-0.2749	.5503	-.0579	-9.4809	.9791
15	B.A.C. 6060	6½	+32	-21	12 59.1	-5 12 38	+0.2415	.5490	-.0306	-9.5076	.9762
16	B.A.C. 6267	6	-45	-90	4 13.6	+9 32 17	-1.0247	.5476	-.0060	-9.4871	.9785
16	B.A.C. 6237	6	+15	-35	5 16.3	+10 32 59	-0.0039	.5473	-.0043	-9.5084	.9762
16	B.A.C. 6292	6	+27	-24	5 48.8	+11 4 28	+0.1935	.5473	-.0032	-9.5124	.9757
16	B.A.C. 6293	6½	-13	-70	5 51.8	+11 7 22	-0.5116	.5473	-.0032	-9.4980	.9773
16	B.A.C. 6294	6	-4	-58	5 52.5	+11 8 3	-0.3566	.5473	-.0032	-9.5012	.9770
16	B.A.C. 6536	6	+71	+22	23 29.8	+4 11 23	+0.9458	.5453	+0.0252	-9.5233	.9744
17	δ Sagittarii	5	+71	+8	4 0.7	+8 33 39	+0.7330	.5447	+0.0321	-9.5166	.9752
17	ϵ Sagittarii	4	-4	-61	5 59.4	+10 28 32	-0.4089	.5444	+0.0352	-9.4921	.9780
17	ϵ^2 Sagittarii	5½	+24	-29	6 3.2	+10 32 14	+0.0994	.5444	+0.0353	-9.5026	.9768
17	B.A.C. 6558	6	+37	-18	9 4.4	-10 32 18	+0.2944	.5440	+0.0399	-9.5042	.9766
18	B.A.C. 7063	6	-57	-90	16 54.1	-3 40 47	-1.2257	.5398	+0.0854	-9.4267	.9839
18	B.A.C. 7097	6	+64	-1	18 3.6	-2 35 17	+0.6059	.5395	+0.083	-9.4653	.9846
18	τ^1 Capricor	6	-23	-90	18 59.4	-1 41 16	-0.8354	.5394	+0.086	-9.4216	.9837
18	τ^2 Capricor	5	-31	-90	19 56.8	-0 45 42	-0.9548	.5393	+0.0909	-9.4246	.9840
18	B.A.C. 7145	6½	+49	-12	20 33.2	-0 10 23	+0.4132	.5361	+0.0919	-9.4557	.9815
19	29 Capricor	6	+75	+50	14 3.4	-7 12 38	+1.2417	.5360	+0.1142	-9.4328	.9834
19	18 Aquarii	6	-16	-90	18 18.9	-3 4 59	-0.7764	.5364	+0.1112	-9.3663	.9879
20	1 Aquarii	5½	-28	-00	5 33.0	+7 48 32	-0.9806	.5353	+0.1322	-9.3169	.9904
20	ϵ^1 Aquarii	6	+39	-27	17 39.2	-4 27 20	+0.1405	.5342	+0.1444	-9.2185	.9912
20	ϵ^2 Aquarii	6	+78	+22	17 41.7	-4 24 52	+0.9636	.5342	+0.1445	-9.3254	.9900
21	MERCURY		-65	-90	14 32.0	-8 12 24	-1.3357	.5260	+0.1708	-9.0977	.9966
21	1 Aquarii	4	+29	-39	15 0.5	-7 44 45	-0.0654	.5335	+0.1624	-9.1585	.9954
21	78 Aquarii	6	+15	-54	16 0.5	-6 46 38	-0.3143	.5333	+0.1632	-9.1384	.9958
21	81 Aquarii	6	+39	-29	19 28.3	-3 15 1	+0.1069	.5335	+0.1657	-9.1309	.9960
21	82 Aquarii	6	+15	-55	20 3.4	-2 50 59	-0.3272	.5335	+0.1660	-9.1029	.9965
21	1 ^h Aquarii	6	+82	+33	21 22.3	-1 34 30	+1.1169	.5335	+0.1670	-9.1649	.9953
21	1 ^h Aquarii	7	+82	+41	21 27.3	-1 29 40	+1.1165	.5335	+0.1671	-9.1680	.9952
21	1 ^h Aquarii	7½	+82	+54	22 24.9	-0 33 48	+1.2903	.5336	+0.1677	-9.1648	.9953
21	MARS		+50	-19	23 29.8	+0 28 32	+0.2848	.5013	+0.1549	-9.1019	.9965
22	φ Aquarii	4½	+40	-29	2 2.0	+2 56 50	+0.1099	.5337	+0.1698	-9.0711	.9970
22	96 Aquarii	5½	+9	-63	4 36.1	+5 26 13	-0.4475	.5337	+0.1714	-9.0080	.9977
22	B.A.C. 8134	6½	-9	-90	5 36.9	+6 25 11	-0.7633	.5336	+0.1719	-8.9733	.9981
24	μ Piscium	4½	-10	-85	21 49.1	-3 20 46	-0.8013	.5451	+0.1802	+8.9783	.9980
25	ν Piscium	4½	+90	+15	3 17.1	+1 56 52	+0.8604	.5461	+0.1780	+8.9240	.9985
25	64 Ceti	6½	+37	-31	17 32.4	-8 15 22	+0.0326	.5518	+0.1703	+9.1407	.9958
25	ξ^1 Ceti	4½	+28	-40	18 18.3	-7 30 57	-0.1274	.5518	+0.1699	+9.1554	.9955
25	B.A.C. 741	6½	+26	-41	23 41.8	-2 18 2	-0.1576	.5542	+0.1660	+9.1907	.9945
25	ξ Arietis	5	-30	-80	23 49.9	-2 10 9	-1.0777	.5542	+0.1659	+9.2400	.9933
26	B.A.C. 755	6½	-15	-80	0 44.4	-1 17 27	-0.8819	.5546	+0.1652	+9.2382	.9934
26	B.A.C. 830	6	+40	-27	8 2.9	+5 46 31	+0.0865	.05576	+0.1592	+9.2470	9.9931

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF
PLANETS AND STARS BY THE MOON, FOR THE YEAR 1868.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of Conjunction.	At Washington Mean Time of Conjunction.					
			North-ern.	South-ern.		H	V	p'	q'	Log sin D	Log cos D
Mar. 26	μ Ceti	4	+00	+21	9 10.3	+ 6 51 48	+0.9160	0.5580	+1.582	+9.2200	9.9939
26	B.A.C. 987	6½	+14	-53	21 12.7	- 5 30 14	-0.3812	.5632	+1.462	+9.3368	.9895
27	γ Tauri	4	+90	+24	5 58.2	+ 2 57 13	+0.9202	.5673	+1.358	+9.3346	.9896
27	Wei.III. 1085	8½	+68	+ 1	20 36.8	- 6 55 1	+0.4993	.5738	+1.160	+9.4032	.9856
27	Wei.III. 1127	8	+90	+59	21 33.8	- 6 0 2	+1.2540	.5744	+1.144	+9.3648	.9868
27	Wei. IV. 24	9	+76	+ 6	23 25.1	- 4 12 36	+0.5821	.5752	+1.117	+9.4098	.9852
27	Lal. 7753	7½	+27	-34	23 30.0	- 4 7 55	-0.1443	.5752	+1.116	+9.4296	.9837
27	B.A.C. 1281	7	-15	-74	23 32.8	- 4 5 16	-0.8650	.5753	+1.115	+9.4482	.9822
27	Rumk. 1103	7	+47	-15	23 36.9	- 4 1 18	+0.1983	.5753	+1.114	+9.4208	.9844
28	Rumk. 1108	9	+90	+30	0 4.5	- 3 34 38	+0.9632	.5753	+1.109	+9.4012	.9858
28	Rumk. 1123	8½	+90	+41	0 54.6	- 2 46 20	+1.0919	.5758	+1.096	+9.4802	.9858
28	48 Tauri	6	+83	+10	1 36.1	- 2 6 20	+0.6384	.5761	+1.084	+9.4148	.9848
28	Rumk. 1136	6	+26	-35	2 2.5	- 1 40 51	-0.1598	.5761	+1.078	+9.4372	.9831
28	γ Tauri	4	+76	+ 6	3 19.9	- 0 26 18	+0.5766	.5768	+1.059	+9.4215	.9843
28	55 Tauri	7	+16	-46	3 21.9	- 0 24 22	-0.3468	.5768	+1.055	+9.4456	.9824
28	58 Tauri	6	+90	+48	3 41.5	- 0 5 24	+1.1631	.5770	+1.051	+9.4065	.9854
28	Rumk. 1163	8	+ 3	-62	4 3.8	+ 0 16 2	-0.5704	.5770	+1.045	+9.4530	.9818
28	Wei. IV. 286	8	+90	+71	4 36.5	+ 0 47 34	+1.2918	.5771	+1.036	+9.4056	.9855
28	δ^1 Tauri	4	-59	-73	4 38.4	+ 0 49 27	-1.2753	.5772	+1.036	+9.4715	.9801
28	63 Tauri	6	+ 9	-54	4 51.9	+ 1 2 26	-0.4637	.5772	+1.032	+9.4524	.9818
28	B.A.C. 1351	6½	+18	-43	4 53.4	+ 1 3 55	-0.3079	.5772	+1.032	+9.4486	.9821
28	δ^2 Tauri	6	-37	-73	5 8.5	+ 1 18 24	-1.1256	.5774	+1.028	+9.4692	.9803
28	Lal. 8249	7½	-20	-73	5 15.8	+ 1 25 25	-0.7377	.5775	+1.026	+9.4602	.9811
28	Lal. 8256	8	+ 5	-59	5 18.4	+ 1 27 58	-0.5327	.5775	+1.026	+9.4553	.9816
28	70 Tauri	7	+68	+ 2	5 49.8	+ 1 58 13	+0.4841	.5777	+1.015	+9.4305	.9836
28	Lal. 8311	8	+78	+ 8	6 2.2	+ 2 10 11	+0.5977	.5778	+1.014	+9.4284	.9838
28	Rumk. 1188	6½	+90	+30	6 2.4	+ 2 10 22	+0.9436	.5778	+1.014	+9.4191	.9845
28	Rumk. 1189	6	+11	-50	6 8.6	+ 2 16 23	-0.4196	.5778	+1.012	+9.4546	.9816
28	71 Tauri	6	+90	+24	6 8.7	+ 2 16 30	+0.8572	.5778	+1.012	+9.4217	.9843
28	Rumk. 1192	6	- 7	-73	6 11.6	+ 2 19 15	-0.7254	.5780	+1.012	+9.4622	.9809
28	Rumk. 1198	6	+90	+33	6 28.1	+ 2 35 8	+0.9865	.5781	+1.007	+9.4191	.9845
28	Rumk. 1200	6	+90	+29	6 40.8	+ 2 47 26	+0.9367	.5782	+1.004	+9.4211	.9843
28	Rumk. 1203	6	+49	-12	6 59.4	+ 3 5 20	+0.2310	.5783	+0.999	+9.4404	.9828
28	75 Tauri	6	+46	-15	7 2.0	+ 3 7 53	+0.1759	.5783	+0.998	+9.4419	.9827
28	δ^1 Tauri	4½	+77	+ 8	7 5.5	+ 3 11 14	+0.5898	.5783	+0.997	+9.4313	.9836
28	δ^2 Tauri	4½	+90	+13	7 8.0	+ 3 13 37	+0.6882	.5783	+0.997	+9.4289	.9837
28	Rumk. 1210	6	+61	- 3	7 15.9	+ 3 21 14	+0.4018	.5784	+0.994	+9.4367	.9831
28	Rumk. 1212	6	-27	-73	7 23.1	+ 3 28 11	-1.0184	.5784	+0.993	+9.4721	.9800
28	80 Tauri	6	+90	+33	7 46.3	+ 3 50 32	+0.9874	.5784	+0.996	+9.4226	.9842
28	B.A.C. 1391	5	+63	- 1	7 56.2	+ 4 0 6	+0.4281	.5786	+0.994	+9.4377	.9831
28	81 Tauri	5½	+90	+31	7 59.3	+ 4 3 3	+0.9513	.5786	+0.993	+9.4241	.9841
28	B.A.C. 1394	7	+67	+ 2	8 2.0	+ 4 5 42	+0.4784	.5786	+0.992	+9.4367	.9831
28	Rumk. 1227	7	+90	+24	8 17.4	+ 4 20 28	+0.8505	.5788	+0.978	+9.4276	.9838
28	85 Tauri	6	+90	+23	8 30.1	+ 4 32 42	+0.8327	.5789	+0.974	+9.4286	.9838
28	Rumk. 1232	6	+40	-20	8 42.4	+ 4 44 35	+0.0796	.5790	+0.971	+9.4485	.9821
28	Rumk. 1233	6	-48	-73	8 48.5	+ 4 50 28	-1.2145	.5790	+0.969	+9.4799	.9792
28	Rumk. 1235	7	+90	+15	8 54.6	+ 4 56 22	+0.7101	.5791	+0.968	+9.4329	.9834
28	B.A.C. 1406	7	+62	- 2	9 15.2	+ 5 16 14	+0.4129	.5792	+0.962	+9.4414	.9827
28	Rumk. 1238	10	+50	-11	9 36.1	+ 5 36 22	+0.5214	.5793	+0.956	+9.4463	.9823
28	Lal. 8599	9	-28	-73	9 40.2	+ 5 40 21	-1.0238	.5794	+0.955	+9.4774	.9795
28	Lal. 8610	8	+22	-38	9 48.6	+ 5 48 21	-0.2360	.5794	+0.953	+9.4589	.9812
28	Lal. 8613	8	+10	-51	9 49.9	+ 5 49 38	-0.4427	.5795	+0.952	+9.4640	.9808
28	α Tauri	1	+54	- 8	10 13.2	+ 6 12 7	+0.3002	.5796	+0.946	+9.4466	.9823
28	89 Tauri	7	+90	+25	11 11.0	+ 7 7 51	+0.2634	.5800	+0.930	+9.4340	.9833
28	α^1 Tauri	5½	+90	+49	11 36.9	+ 7 32 44	+1.1572	0.5802	+0.923	+9.4278	9.9838

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1868.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of δ .	At Washington Mean Time of Conjunction.					
			North-ern.	South-ern.		H	Y	p'	q'	Log $\sin D$	Log $\cos D$
Mar. 28	α^2 Tauri	5 $\frac{1}{2}$	+67	+38	11 39.7	$\begin{smallmatrix} h & m & s \\ + & 7 & 35 & 26 \end{smallmatrix}$	+0.0409	0.5802	+0.0922	+9.4310	9.9836
28	Rumk. J241		+64	0	11 54.8	$\begin{smallmatrix} h & m & s \\ + & 7 & 50 & 1 \end{smallmatrix}$	+0.4390	5803	+0.0916	+9.4471	9823
28	Rumk. 1243	8	+66	+ 2	12 8.0	$\begin{smallmatrix} h & m & s \\ + & 8 & 2 & 41 \end{smallmatrix}$	+0.4649	5804	+0.0913	+9.4469	9823
28	Rumk. 1246	7	+11	-49	12 35.7	$\begin{smallmatrix} h & m & s \\ + & 8 & 29 & 26 \end{smallmatrix}$	-0.4217	5806	+0.0906	+9.4697	9802
28	Rumk. 1247		+54	- 7	12 36.0	$\begin{smallmatrix} h & m & s \\ + & 8 & 29 & 44 \end{smallmatrix}$	+0.3064	5806	+0.0906	+9.4520	9819
28	Rumk. 1254		+57	- 4	12 52.2	$\begin{smallmatrix} h & m & s \\ + & 8 & 45 & 20 \end{smallmatrix}$	+0.3541	5807	+0.0901	+9.4514	9819
28	Rumk. 1255		+90	+43	12 53.4	$\begin{smallmatrix} h & m & s \\ + & 8 & 46 & 30 \end{smallmatrix}$	+1.0889	5807	+0.0901	+9.4327	9835
28	Lal. 8852	9 $\frac{1}{2}$	+20	-39	13 12.2	$\begin{smallmatrix} h & m & s \\ + & 9 & 4 & 34 \end{smallmatrix}$	-0.2690	5808	+0.0896	+9.4673	9806
28	Rumk. 1263		+90	+41	13 50.9	$\begin{smallmatrix} h & m & s \\ + & 9 & 41 & 51 \end{smallmatrix}$	+1.0765	5810	+0.0884	+9.4352	9832
28	Rumk. 1268	8 $\frac{1}{2}$	+90	+63	14 27.2	$\begin{smallmatrix} h & m & s \\ + & 10 & 16 & 52 \end{smallmatrix}$	+1.2572	5813	+0.0874	+9.4319	9835
28	Rumk. 1283	7	+81	+11	15 37.7	$\begin{smallmatrix} h & m & s \\ + & 11 & 24 & 48 \end{smallmatrix}$	+0.6209	5817	+0.0855	+9.4507	9820
28	Rumk. 1294		+90	+47	16 32.2	$\begin{smallmatrix} h & m & s \\ - & 11 & 42 & 47 \end{smallmatrix}$	+1.1308	5820	+0.0838	+9.4397	9829
28	Rumk. 1299	7 $\frac{1}{2}$	+15	-45	16 57.0	$\begin{smallmatrix} h & m & s \\ - & 11 & 18 & 52 \end{smallmatrix}$	-0.3617	5822	+0.0831	+9.4772	9795
28	Rumk. 1300		+18	-41	16 59.4	$\begin{smallmatrix} h & m & s \\ - & 11 & 16 & 33 \end{smallmatrix}$	-0.3041	5822	+0.0831	+9.4759	9796
28	B.A.C. 1526	6	+58	- 3	19 17.4	$\begin{smallmatrix} h & m & s \\ - & 9 & 3 & 36 \end{smallmatrix}$	+0.3631	5833	+0.0794	+9.4645	9807
28	m Tauri	5 $\frac{1}{2}$	-17	-72	23 26.9	$\begin{smallmatrix} h & m & s \\ - & 5 & 3 & 20 \end{smallmatrix}$	-0.8874	5849	+0.0713	+9.5006	9770
29	111 Tauri	6	+90	+25	6 33.8	$\begin{smallmatrix} h & m & s \\ + & 1 & 47 & 38 \end{smallmatrix}$	+0.8138	5875	+0.0581	+9.4722	9800
29	115 Tauri	5 $\frac{1}{2}$	+52	- 5	7 42.1	$\begin{smallmatrix} h & m & s \\ + & 2 & 53 & 22 \end{smallmatrix}$	+0.2760	5878	+0.0560	+9.4863	9786
29	117 Tauri	6	+90	+41	8 4.4	$\begin{smallmatrix} h & m & s \\ + & 3 & 14 & 54 \end{smallmatrix}$	+1.0337	5879	+0.0555	+9.4690	9803
29	119 Tauri	5 $\frac{1}{2}$	+19	-36	9 46.4	$\begin{smallmatrix} h & m & s \\ + & 4 & 53 & 6 \end{smallmatrix}$	-0.2748	5886	+0.0521	+9.5013	9770
29	120 Tauri	6	+24	-31	10 19.1	$\begin{smallmatrix} h & m & s \\ + & 5 & 24 & 32 \end{smallmatrix}$	-0.1966	5886	+0.0515	+9.5001	9771
29	130 Tauri	6	+90	+29	16 3.9	$\begin{smallmatrix} h & m & s \\ + & 10 & 56 & 17 \end{smallmatrix}$	+0.8498	5902	+0.0399	+9.4823	9790
29	χ^2 Orionis	6	-38	-71	19 5.8	$\begin{smallmatrix} h & m & s \\ - & 10 & 8 & 42 \end{smallmatrix}$	-1.1282	5911	+0.0339	+9.5281	9737
29	B.A.C. 1930	6 $\frac{1}{2}$	+90	+47	22 25.1	$\begin{smallmatrix} h & m & s \\ - & 6 & 56 & 66 \end{smallmatrix}$	+1.0745	5918	+0.0269	+9.4820	9790
29	χ^2 Orionis	5	-26	-71	22 34.7	$\begin{smallmatrix} h & m & s \\ - & 6 & 47 & 46 \end{smallmatrix}$	-0.9890	5920	+0.0266	+9.5275	9738
30	68 Orionis	6	-30	-70	2 4.1	$\begin{smallmatrix} h & m & s \\ - & 3 & 26 & 20 \end{smallmatrix}$	-1.0368	5926	+0.0198	+9.5301	9735
30	71 Orionis	5 $\frac{1}{2}$	+13	-40	3 14.3	$\begin{smallmatrix} h & m & s \\ - & 2 & 18 & 45 \end{smallmatrix}$	-0.3835	5929	+0.0175	+9.5169	9751
30	26 Geminor	5 $\frac{1}{2}$	+90	+54	14 26.7	$\begin{smallmatrix} h & m & s \\ + & 8 & 27 & 48 \end{smallmatrix}$	+1.1316	5950	-0.0660	+9.4845	9788
31	B.A.C. 2432	6 $\frac{1}{2}$	+34	-19	6 51.6	$\begin{smallmatrix} h & m & s \\ + & 0 & 14 & 42 \end{smallmatrix}$	-0.0095	5958	-0.0399	+9.5019	9769
31	f Geminor	6	+50	- 7	13 29.2	$\begin{smallmatrix} h & m & s \\ + & 6 & 36 & 68 \end{smallmatrix}$	+0.2389	5957	-0.0636	+9.4893	9783
31	g Geminor	5 $\frac{1}{2}$	-10	-71	16 9.6	$\begin{smallmatrix} h & m & s \\ + & 9 & 11 & 8 \end{smallmatrix}$	-0.7773	5955	-0.0587	+9.5088	9761
31	3 Cancri	6	+36	-21	22 6.8	$\begin{smallmatrix} h & m & s \\ - & 9 & 5 & 25 \end{smallmatrix}$	+0.0108	5951	-0.0716	+9.4821	9790
31	5 Cancri	6	+90	+26	22 25.1	$\begin{smallmatrix} h & m & s \\ - & 8 & 47 & 46 \end{smallmatrix}$	+0.8480	5950	-0.0715	+9.4613	9810
April 1	B.A.C. 2731	6 $\frac{1}{2}$	+35	-23	1 51.5	$\begin{smallmatrix} h & m & s \\ - & 5 & 29 & 23 \end{smallmatrix}$	+0.0612	5946	-0.0780	+9.4757	9797
1	ζ^1 Cancri	4 $\frac{1}{2}$	- 6	-72	2 44.0	$\begin{smallmatrix} h & m & s \\ - & 4 & 38 & 53 \end{smallmatrix}$	-0.7156	5946	-0.0797	+9.4909	9781
1	ζ^2 Cancri	7 $\frac{1}{2}$	- 6	-72	2 44.1	$\begin{smallmatrix} h & m & s \\ - & 4 & 38 & 48 \end{smallmatrix}$	-0.7128	5944	-0.0797	+9.4909	9781
1	δ^2 Cancri	6	0	-64	8 17.8	$\begin{smallmatrix} h & m & s \\ + & 0 & 42 & 10 \end{smallmatrix}$	-0.6184	5936	-0.0900	+9.4776	9795
1	54 Cancri	6 $\frac{1}{2}$	+35	-25	18 37.0	$\begin{smallmatrix} h & m & s \\ + & 10 & 37 & 41 \end{smallmatrix}$	+0.0062	5917	-0.1090	+9.4360	9832
1	α^1 Cancri	6	+20	-41	20 9.7	$\begin{smallmatrix} h & m & s \\ - & 10 & 55 & 25 \end{smallmatrix}$	-0.2655	5913	-0.1132	+9.4357	9832
1	α^2 Cancri	6	+ 5	-60	21 17.7	$\begin{smallmatrix} h & m & s \\ - & 10 & 47 & 39 \end{smallmatrix}$	-0.5417	5913	-0.1133	+9.4425	9826
2	π^1 Cancri	6 $\frac{1}{2}$	- 5	-74	3 24.3	$\begin{smallmatrix} h & m & s \\ - & 4 & 54 & 59 \end{smallmatrix}$	-0.7029	5897	-0.1238	+9.4275	9839
2	π^2 Cancri	6	-12	-75	4 35.3	$\begin{smallmatrix} h & m & s \\ - & 3 & 46 & 35 \end{smallmatrix}$	-0.8111	5892	-0.1257	+9.4265	9839
2	18 Leonis	6	+69	- 1	17 36.2	$\begin{smallmatrix} h & m & s \\ + & 8 & 45 & 2 \end{smallmatrix}$	+0.5119	5860	-0.1452	+9.3324	9897
2	B.A.C. 3345	6	+90	+17	18 6.5	$\begin{smallmatrix} h & m & s \\ + & 9 & 14 & 18 \end{smallmatrix}$	+0.8186	5859	-0.1457	+9.3192	9903
2	ν Leonis	5	-16	-77	22 34.0	$\begin{smallmatrix} h & m & s \\ - & 10 & 28 & 10 \end{smallmatrix}$	-0.8841	5844	-0.1518	+9.3544	9886
3	A Leonis	5	+90	+22	2 41.0	$\begin{smallmatrix} h & m & s \\ - & 6 & 30 & 13 \end{smallmatrix}$	+0.9226	5833	-0.1569	+9.2663	9925
3	α Leonis	1 $\frac{1}{2}$	-31	-78	2 52.3	$\begin{smallmatrix} h & m & s \\ - & 6 & 19 & 23 \end{smallmatrix}$	-1.0844	5832	-0.1571	+9.3390	9894
3	B.A.C. 3538	6 $\frac{1}{2}$	+90	+25	8 46.3	$\begin{smallmatrix} h & m & s \\ - & 0 & 38 & 19 \end{smallmatrix}$	+0.9676	5814	-0.1640	+9.2232	9938
3	44 Leonis	6	+90	+22	10 3.4	$\begin{smallmatrix} h & m & s \\ + & 0 & 35 & 57 \end{smallmatrix}$	+0.9296	5812	-0.1653	+9.2154	9941
3	B.A.C. 3562	6 $\frac{1}{2}$	+90	+21	10 12.2	$\begin{smallmatrix} h & m & s \\ + & 0 & 44 & 28 \end{smallmatrix}$	+0.9164	5812	-0.1654	+9.2149	9941
3	45 Leonis	4	+23	-44	11 4.2	$\begin{smallmatrix} h & m & s \\ + & 1 & 34 & 33 \end{smallmatrix}$	-0.2233	5808	-0.1664	+9.2578	9928
3	ρ Leonis	4	+27	-40	13 16.9	$\begin{smallmatrix} h & m & s \\ + & 3 & 42 & 22 \end{smallmatrix}$	-0.1424	5802	-0.1686	+9.2389	9934
3	49 Leonis	6	+57	-13	14 14.6	$\begin{smallmatrix} h & m & s \\ + & 4 & 38 & 3 \end{smallmatrix}$	+0.3524	5800	-0.1696	+9.2097	9942
4	ϵ Leonis	5	+90	+22	1 20.0	$\begin{smallmatrix} h & m & s \\ - & 8 & 40 & 35 \end{smallmatrix}$	+0.9506	5768	-0.1795	+9.0738	9969
4	ζ Leonis	5	0	-76	3 11.7	$\begin{smallmatrix} h & m & s \\ - & 6 & 52 & 51 \end{smallmatrix}$	-0.6328	0.5761	-0.1809	+9.1460	9.9957

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF
PLANETS AND STARS BY THE MOON, FOR THE YEAR 1868.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Wash- ington Mean Time of Conj.	At Washington Mean Time of Conjunction.					
			North- ern.	South- ern.		<i>H</i>	<i>Y</i>	<i>p'</i>	<i>q'</i>	Log sin <i>D</i>	Log cos <i>D</i>
April 4	α Leonis	4	+1	-75	10 12.3	— 0 7 10	-0.6132	0.5744	—1.857	+9.0701	9.9970
4	β Virginis	3½	+90	+44	23 9.2	-11 37 39	+1.2243	.5709	—1.916	+8.6406	.9996
5	10 Virginis	6	+5	-70	7 37.2	-3 27 21	-0.5398	.5691	—1.938	+8.6627	9.9995
5	γ Virginis	3½	+90	+39	12 10.6	+0 56 32	+1.1836	.5686	—1.944	+7.0529	0.0000
5	γ Virginis, pr.	2½	+40	-30	21 56.8	+10 22 29	+0.0910	.5665	—1.941	-8.1039	0.0000
5	B.A.C. 4277	6	+38	-32	22 47.2	+11 11 14	+0.0522	.5665	—1.940	-8.1714	9.9999
6	38 Virginis	6	+88	+45	3 6.0	-8 38 53	+1.2425	.5655	—1.932	-8.6146	.9995
6	κ Virginis	6	+87	+20	6 0.0	-5 50 50	+0.9524	.5651	—1.925	-8.7331	.9994
6	46 Virginis	6½	+61	-12	6 25.5	-5 26 13	+0.4206	.5649	—1.923	-8.6665	.9995
6	48 Virginis	6	+62	-11	7 54.9	-3 59 50	+0.4353	.5649	—1.920	-8.7121	.9994
6	65 Virginis	6	+39	-31	16 40.9	+4 28 11	+0.0782	.5638	—1.884	-8.8683	.9988
6	66 Virginis	6	+47	-23	17 13.8	+4 59 56	+0.2212	.5638	—1.883	-8.8922	.9987
6	λ Virginis	5	+84	+5	20 35.9	+8 15 10	+0.7201	.5632	—1.865	-8.9874	.9979
6	80 Virginis	6	+9	-64	22 12.6	+9 48 38	-0.4533	.5631	—1.857	-8.9158	.9985
7	94 Virginis	6	+79	+2	12 10.0	-0 42 20	+0.6656	.5621	—1.762	-9.1574	.9955
7	95 Virginis	6	+82	+29	12 21.7	-0 31 4	+1.0673	.5618	—1.760	-9.1789	.9950
8	ε Libræ	6	+46	-21	10 3.7	-3 32 57	+0.2552	.5608	—1.551	-9.2342	.9914
8	ε³ Libræ	6	+8	-62	11 9.4	-2 29 27	-0.4194	.5605	—1.538	-9.2757	.9921
8	18 Libræ, pr.	6½	-17	-90	12 8.5	-1 32 20	-0.8468	.5604	—1.527	-9.2652	.9925
8	B.A.C. 5070	6	-44	-90	23 32.0	+9 28 12	-1.1652	.5600	—1.387	-9.3142	.9906
9	γ Libræ	4½	+76	+5	4 48.7	-9 25 45	+0.7049	.5596	—1.319	-9.3941	.9862
9	η Libræ	6	+75	+39	8 42.9	-5 39 31	+1.1572	.5595	—1.265	-9.4200	.9844
9	48 Libræ	4½	-37	-90	15 12.3	+0 36 53	-1.0713	.5594	—1.176	-9.3805	.9871
9	49 Libræ	5½	+74	+45	16 10.7	+1 33 17	+1.2023	.5592	—1.162	-9.4441	.9825
10	φ Ophiuchi	5	+20	-40	6 16.3	-8 49 27	-0.0914	.5585	—0.952	-9.4487	.9822
10	24 Scorpii	5	+73	+6	11 2.2	-4 13 8	+0.7199	.5580	—0.876	-9.4777	.9795
10	B.A.C. 5695	6	-22	-90	17 42.4	+2 13 42	-0.7881	.5574	—0.769	-9.4557	.9815
10	29 Ophiuchi	6½	+72	+62	20 20.8	+4 46 47	+1.2732	.5569	—0.729	-9.5057	.9765
10	B.A.C. 5771	6½	+6	-53	23 19.4	+7 39 30	-0.2882	.5567	—0.680	-9.4765	.9716
11	B.A.C. 5839	6½	-3	-64	4 41.9	-11 8 49	-0.4337	.5563	—0.689	-9.4809	.9791
11	B.A.C. 6060	6½	+25	-31	21 23.3	+4 59 26	+0.0706	.5539	—0.310	-9.5076	.9762
12	B.A.C. 6267	6	-61	-90	12 24.2	-4 29 16	-1.1937	.5513	—0.059	-9.4871	.9785
12	B.A.C. 6287	6	+6	-46	13 26.1	-3 29 26	-0.1791	.5512	—0.040	-9.5084	.9762
12	B.A.C. 6292	6	+17	-34	13 58.2	-2 58 21	+0.0172	.5512	—0.036	-9.5124	.9757
12	B.A.C. 6293	6½	-22	-90	14 1.2	-2 55 28	-0.6842	.5512	—0.036	-9.4980	.9773
12	B.A.C. 6294	6	-14	-72	14 1.9	-2 54 49	-0.5300	.5512	—0.035	-9.5012	.9770
13	B.A.C. 6536	6	+71	+9	7 27.3	-11 3 22	+0.7631	.5475	+0.023	-9.5233	.9744
13	δ Sagittarii	5	+54	-4	11 55.9	-5 43 27	+0.5511	.5466	+0.022	-9.5166	.9752
13	ε¹ Sagittarii	4	-14	-78	13 53.6	-3 49 31	-0.5865	.5463	+0.054	-9.4921	.9780
13	ε² Sagittarii	5½	+14	-40	13 57.3	-3 45 52	-0.0801	.5461	+0.054	-9.5026	.9768
13	B.A.C. 6658	6	+26	-28	16 57.1	-0 51 53	+0.1140	.5454	+0.040	-9.5042	.9766
14	B.A.C. 7043	6½	+72	+38	22 34.7	+3 49 30	+1.1361	.5391	+0.043	-9.4863	.9785
15	B.A.C. 7097	6	+51	-11	1 49.3	+6 58 3	+0.4318	.5384	+0.086	-9.4653	.9806
15	τ¹ Capricor	6	-35	-90	2 45.0	+7 52 3	-1.0069	.5381	+0.090	-9.4296	.9837
15	τ² Capricor	5	-45	-90	3 42.4	+8 47 38	-1.1256	.5379	+0.091	-9.4245	.9841
15	B.A.C. 7145	6½	+38	-22	4 18.6	+9 22 44	+0.2302	.5378	+0.091	-9.4556	.9815
15	29 Capricor	6	+75	+31	21 50.6	+2 22 19	+1.0780	.5348	+1.145	-9.4328	.9834
16	18 Aquarii	6	-26	-90	2 6.9	+6 30 44	-0.9358	.5339	+1.195	-9.3663	.9879
16	B.A.C. 7487	6½	+51	-14	7 10.8	+11 25 23	+0.3763	.5338	+1.253	-9.3857	.9868
16	λ Capricor.	5	-40	-90	13 23.5	-6 33 13	-1.1316	.5325	+1.326	-9.3169	.9904
17	ε¹ Aquarii	6	+31	-35	1 32.9	+4 14 4	+0.0003	.5315	+1.448	-9.2985	.9912
17	ε² Aquarii	6	+78	+12	1 35.5	+4 16 34	+0.8234	.5315	+1.448	-9.3253	.9901
17	λ Aquarii	4	+23	-46	22 59.8	+2 2 16	-0.1814	.5310	+1.630	-9.1584	.9954
17	78 Aquarii	6	+9	-62	23 59.9	+3 0 37	-0.4289	.5309	+1.637	-9.1383	.9958
18	81 Aquarii	6	+33	-35	3 28.5	+6 22 57	-0.0034	0.5311	+1.663	-9.1308	9.9960

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1868.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of δ .	At Washington Mean Time of Conjunction.						
			North-ern.	South-ern.		H	Y	p'	q'	Log sin D	Log cos D	
					h m	h m s						
April 18	82 Aquarii	6	+ 9	-63	4 3.7	+ 6 57 5	-0.4364	0.5311	+1.666	-9.1029	9.9965	
18	A ¹ Aquarii	6	+82	+24	5 22.8	+ 8 13 50	+1.0081	.5311	+1.676	-9.1648	.9953	
18	A ² Aquarii	7	+82	+30	5 27.9	+ 8 18 43	+1.0877	.5311	+1.677	-9.1679	.9952	
18	A ⁴ Aquarii	7½	+82	+39	6 25.7	+ 9 14 45	+1.1825	.5311	+1.683	-9.1648	.9953	
18	φ Aquarii	4½	+34	-35	10 3.4	-11 14 1	+0.0084	.5315	+1.705	-9.0708	.9970	
18	96 Aquarii	5½	+ 4	-71	12 37.9	- 8 44 13	-0.5445	.5316	+1.721	-9.0079	.9977	
18	B.A.C. 8134	6½	-15	-90	13 38.8	- 7 45 8	-0.8586	.5317	+1.727	-8.9732	.9981	
19	20 Piscium	6	+ 5	-71	3 6.9	+ 5 18 35	-0.5363	.5332	+1.794	-8.7852	.9992	
19	24 Piscium	6½	+55	-16	5 38.1	+ 7 45 11	+0.3403	.5338	+1.803	-8.8313	.9990	
19	27 Piscium	5½	+86	+54	8 32.4	+10 34 12	+1.2978	.5343	+1.815	-8.8739	.9988	
19	29 Piscium	5½	+87	+24	10 7.3	-11 53 46	+1.0174	.5346	+1.820	-8.8171	.9991	
19	JUPITER.		-68	-90	13 27.8	- 8 39 25	-1.3490	.5261	+1.805	-8.2403	.9999	
19	10 Ceti	6	+40	-30	22 31.9	+ 0 8 7	+0.0943	.5375	+1.851	-8.1353	.9999	
20	MERCURY		+17	-54	6 7.0	+ 7 29 7	-0.3173	.4770	+1.576	+8.2054	.9999	
23	f Tauri	4	+90	+31	12 47.2	+11 33 48	+1.0209	.5738	+1.391	+9.3346	.9896	
24	Wei. III. 1085	8½	+81	+ 8	3 7.2	+ 1 22 57	+0.6256	.5806	+1.190	+9.4032	.9856	
24	Wei. IV. 24	9	+90	+13	5 51.8	+ 4 1 36	+0.7114	.5817	+1.146	+9.4098	.9852	
24	Lal. 7753	7½	+35	-27	5 56.8	+ 4 6 20	-0.0082	.5818	+1.145	+9.4226	.9837	
24	B.A.C. 1281	7	- 6	-74	5 59.5	+ 4 8 57	-0.7223	.5818	+1.145	+9.4482	.9822	
24	Rumk. 1103	7	+56	- 8	6 3.5	+ 4 12 49	+0.3315	.5820	+1.144	+9.4208	.9844	
24	Rumk. 1108	9	+90	+41	6 30.6	+ 4 38 56	+1.0899	.5821	+1.136	+9.4012	.9858	
24	Rumk. 1123	8½	+90	+54	7 19.6	+ 5 26 8	+1.2184	.5824	+1.123	+9.4002	.9858	
24	48 Tauri	6	+90	+17	8 0.3	+ 6 5 19	+0.7704	.5828	+1.112	+9.4148	.9848	
24	Rumk. 1136	6	+34	-27	8 26.1	+ 6 30 11	-0.0202	.5829	+1.104	+9.4372	.9831	
24	γ Tauri	4	+90	+14	9 41.8	+ 7 43 7	+0.7114	.5834	+1.084	+9.4215	.9843	
24	55 Tauri	7	+23	-37	9 43.7	+ 7 45 1	-0.2037	.5835	+1.083	+9.4456	.9824	
24	58 Tauri	6	+90	+70	10 3.0	+ 8 3 34	+1.2930	.5836	+1.078	+9.4065	.9854	
24	Rumk. 1161		-48	-73	10 21.5	+ 8 21 23	-1.2201	.5837	+1.073	+9.4723	.9800	
24	Rumk. 1163	8	+11	-51	10 24.7	+ 8 24 30	-0.4249	.5837	+1.072	+9.4530	.9818	
24	δ ¹ Tauri	4	-36	-73	10 58.7	+ 8 57 12	-1.1228	.5840	+1.063	+9.4715	.9801	
24	63 Tauri	6	+17	-44	11 11.9	+ 9 9 54	-0.3180	.5841	+1.060	+9.4524	.9818	
24	B.A.C. 1351	6½	+26	-34	11 13.4	+ 9 11 21	-0.1634	.5841	+1.059	+9.4486	.9821	
24	δ ² Tauri	6	-23	-73	11 28.1	+ 9 25 32	-0.9739	.5842	+1.055	+9.4692	.9803	
24	Lal. 8249	7½	+ 2	-63	11 35.2	+ 9 32 24	-0.5890	.5843	+1.054	+9.4602	.9811	
24	Lal. 8256	8	+14	-48	11 37.8	+ 9 34 53	-0.3855	.5843	+1.053	+9.4553	.9816	
24	70 Tauri	7	+83	+10	12 8.5	+10 4 28	+0.6331	.5846	+1.045	+9.4305	.9836	
24	Lal. 8311	8	+90	+40	12 20.7	+10 16 10	+1.0777	.5847	+1.041	+9.4192	.9845	
24	Rumk. 1188	6½	+90	+40	12 20.9	+10 16 22	+1.0792	.5847	+1.041	+9.4191	.9845	
24	Rumk. 1189		+20	-41	12 27.0	+10 22 14	-0.2725	.5847	+1.039	+9.4546	.9816	
24	71 Tauri	6	+90	+33	12 27.1	+10 22 21	+0.9936	.5847	+1.039	+9.4217	.9843	
24	Rumk. 1192		+ 3	-62	12 29.9	+10 25 4	-0.5756	.5847	+1.039	+9.4622	.9809	
24	Rumk. 1198	6	+90	+44	12 46.1	+10 40 36	+1.1233	.5849	+1.034	+9.4191	.9845	
24	Rumk. 1200		+90	+40	12 58.6	+10 52 38	+1.0737	.5850	+1.031	+9.4211	.9843	
24	Rumk. 1203		+59	- 4	13 16.7	+11 10 10	+0.3748	.5851	+1.026	+9.4404	.9828	
24	75 Tauri	6	+55	- 7	13 19.3	+11 12 38	+0.3191	.5852	+1.025	+9.4419	.9827	
24	δ ¹ Tauri	4½	+90	+16	13 22.7	+11 15 57	+0.7298	.5852	+1.024	+9.4313	.9836	
24	δ ² Tauri	4½	+90	+22	13 25.1	+11 18 15	+0.8272	.5852	+1.023	+9.4289	.9837	
24	Rumk. 1210		+73	+ 5	13 32.9	+11 25 43	+0.5437	.5852	+1.021	+9.4367	.9831	
24	Rumk. 1212	6	-15	-73	13 40.0	+11 32 31	-0.8644	.5853	+1.019	+9.4721	.9800	
24	Rumk. 1214		-43	-73	13 43.6	+11 36 3	-1.1833	.5853	+1.018	+9.4797	.9792	
24	Rumk. 1215	7	-47	-73	13 44.2	+11 36 35	-1.2137	.5853	+1.018	+9.4805	.9792	
24	80 Tauri	6	+90	+44	14 2.7	+11 54 23	+1.1251	.5854	+1.012	+9.4226	.9842	
24	B.A.C. 1391	5	+75	+ 7	14 12.4	-11 56 17	+0.5704	.5854	+1.010	+9.4377	.9831	
24	81 Tauri	5½	+90	+41	14 15.4	-11 53 24	+1.0892	.5855	+1.009	+9.4241	.9841	
24	B.A.C. 1394	7	+81	+ 9	14 18.0	-11 50 48	+0.6206	0.5855	+1.008	+9.4367	9.9831	

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF
PLANETS AND STARS BY THE MOON, FOR THE YEAR 1868.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of δ .	At Washington Mean Time of Conjunction.					
			North-ern.	South-ern.		H	Y	p'	q'	Log $\sin D$	Log $\cos D$
					$h\ m\ s$	$h\ m\ s$					
April 24	Rumk. 1227	7	+90	+33	14 33.1	-11 36 20	+0.9899	0.5855	+0.1004	+9.4276	9.9838
24	85 Tauri	6	+90	+32	14 45.5	-11 24 22	+0.9727	0.5856	+0.1000	+9.4286	9.9838
24	Rumk. 1232		+49	-12	14 57.6	-11 12 45	+0.9260	0.5857	+0.0997	+9.4485	9.9821
24	Rumk. 1233		-30	-73	15 3.5	-11 7 0	-1.0571	0.5857	+0.0985	+9.4799	9.9792
24	Rumk. 1235		+90	+24	15 9.5	-11 1 13	+0.8513	0.5859	+0.0993	+9.4329	9.9834
24	B.A.C. 1406	7	+74	+6	15 29.7	-10 41 46	+0.5571	0.5860	+0.0987	+9.4414	9.9827
24	Rumk. 1238	10	+61	-3	15 50.2	-10 22 2	+0.3975	0.5862	+0.0981	+9.4463	9.9823
24	Lal. 8599	9	-16	-73	15 54.3	-10 18 10	-0.8668	0.5862	+0.0980	+9.4774	9.9795
24	Lal. 8610	8	+30	-29	16 2.4	-10 10 19	-0.0856	0.5863	+0.0978	+9.4589	9.9812
24	Lal. 8613	8	+19	-41	16 3.7	-10 9 6	-0.2905	0.5863	+0.0977	+9.4640	9.9808
24	α Tauri	1	+64	0	16 26.5	-9 47 4	+0.4467	0.5864	+0.0971	+9.4466	9.9823
24	89 Tauri	7	+90	+36	17 23.2	-8 52 34	+1.0233	0.5868	+0.0954	+9.4340	9.9833
24	α^2 Tauri	5½	+90	+51	17 51.2	-8 25 34	+1.1833	0.5869	+0.0946	+9.4310	9.9836
24	Rumk. 1241		+77	+8	18 6.1	-8 11 16	+0.5864	0.5870	+0.0942	+9.4471	9.9823
24	Rumk. 1243	8	+80	+10	18 18.9	-7 58 53	+0.6123	0.5871	+0.0938	+9.4469	9.9823
24	Rumk. 1246	7	+29	-39	18 46.1	-7 32 41	-0.2663	0.5873	+0.0930	+9.4697	9.9802
24	Rumk. 1247		+65	+1	18 46.5	-7 32 22	+0.4558	0.5873	+0.0930	+9.4520	9.9818
24	Rumk. 1254		+69	+4	19 2.3	-7 17 6	+0.5034	0.5875	+0.0927	+9.4514	9.9819
24	Rumk. 1255		+90	+58	19 3.5	-7 15 59	+1.2323	0.5876	+0.0926	+9.4327	9.9835
24	Lal. 8852	9½	+29	-30	19 21.9	-6 58 16	-0.1141	0.5878	+0.0917	+9.4673	9.9805
24	Rumk. 1263	9½	+90	+56	19 59.8	-6 21 47	+1.2210	0.5878	+0.0909	+9.4352	9.9832
24	Rumk. 1283	7	+90	+20	21 44.5	-4 40 59	+0.7720	0.5886	+0.0877	+9.4506	9.9820
24	Rumk. 1289	7½	+24	-35	23 2.2	-3 26 12	-0.2017	0.5890	+0.0855	+9.4772	9.9795
24	Rumk. 1300		+27	-31	23 4.5	-3 23 56	-0.1445	0.5890	+0.0854	+9.4759	9.9796
24	Rumk. 1302	7	-63	-72	23 6.0	-3 22 33	-1.2788	0.5890	+0.0854	+9.5019	9.9769
25	B.A.C. 1536	6	+71	+6	1 19.8	-1 13 42	+0.5201	0.5897	+0.0814	+9.4645	9.9807
25	m Tauri	5½	-6	-71	5 24.6	-2 41 47	-0.7163	0.5911	+0.0733	+9.5006	9.9770
25	111 Tauri	6	+90	+37	12 23.6	+9 24 55	+0.9793	0.5933	+0.0598	+9.4722	9.9800
25	115 Tauri	5½	+65	+4	13 30.8	+10 29 29	+0.4475	0.5936	+0.0576	+9.4663	9.9786
25	117 Tauri	6	+90	+54	13 52.7	+10 50 37	+1.2009	0.5937	+0.0571	+9.4690	9.9803
25	119 Tauri	5½	+30	-26	15 33.0	-11 32 54	-0.0979	0.5943	+0.0536	+9.5013	9.9770
25	120 Tauri	6	+34	-21	16 5.1	-11 2 2	-0.0186	0.5943	+0.0528	+9.5001	9.9771
25	130 Tauri	6	+90	+42	21 44.3	-5 35 52	+1.0264	0.5955	+0.0411	+9.4823	9.9790
26	γ^2 Orionis	6	-21	-71	0 43.5	-2 43 34	-0.9382	0.5961	+0.0350	+9.5281	9.9737
26	B.A.C. 1930	6½	+90	+68	4 0.1	+0 25 23	+1.2560	0.5965	+0.0283	+9.4820	9.9790
26	γ^2 Orionis	5	-11	-71	4 9.5	+0 34 26	-0.7973	0.5965	+0.0280	+9.5275	9.9738
26	γ^4 Orionis	5	-57	-70	4 20.0	+0 44 31	-1.2488	0.5965	+0.0278	+9.5369	9.9726
26	68 Orionis	6	-15	-70	7 36.2	+3 53 7	-0.8427	0.5970	+0.0206	+9.5302	9.9735
26	71 Orionis	5½	+24	-28	8 45.5	+4 59 47	-0.1915	0.5973	+0.0182	+9.5169	9.9751
26	γ Geminor	4½	-53	-70	14 23.8	+10 24 56	-1.2331	0.5974	+0.0061	+9.5400	9.9722
27	B.A.C. 2432	6½	+48	-7	12 10.1	+7 20 23	+0.2133	0.5968	-0.0395	+9.5020	9.9769
27	f Geminor	6	+65	+5	18 47.2	-10 17 41	+0.4472	0.5955	-0.0533	+9.4893	9.9783
27	g Geminor	5½	+3	-58	21 27.6	-7 43 28	-0.5702	0.5950	-0.0588	+9.5088	9.9761
28	3 Cancri	6	+49	-10	3 25.7	-1 59 8	+0.2202	0.5937	-0.0707	+9.4821	9.9790
28	5 Cancri	6	+90	+42	3 44.1	-1 41 29	+1.0595	0.5936	-0.0711	+9.4613	9.9810
28	B.A.C. 2731	6½	+48	-11	7 11.3	+1 37 47	+0.2110	0.5928	-0.0776	+9.4757	9.9796
28	ζ^1 Cancri	4½	+6	-54	8 4.1	+2 28 33	-0.5080	0.5925	-0.0794	+9.4909	9.9781
28	ζ^2 Cancri	7½	+7	-54	8 4.2	+2 28 40	-0.5052	0.5925	-0.0794	+9.4909	9.9781
28	δ^2 Cancri	6	+12	-49	13 40.1	+7 51 46	-0.4112	0.5907	-0.0901	+9.4776	9.9795
29	54 Cancri	6½	+48	-14	0 5.2	-6 6 45	+0.2141	0.5876	-0.1084	+9.4359	9.9832
29	α^1 Cancri	6	+32	-29	2 29.7	-3 37 58	-0.0599	0.5867	-0.1129	+9.4357	9.9832
29	α^2 Cancri	6	+16	-46	2 47.9	-3 30 7	-0.2377	0.5867	-0.1131	+9.4425	9.9826
29	π^1 Cancri	6½	+7	-58	9 59.5	+3 27 35	-0.5029	0.5845	-0.1231	+9.4275	9.9838
29	π^2 Cancri	6	+1	-67	10 11.6	+3 37 4	-0.6129	0.5841	-0.1249	+9.4265	9.9839
29	7 Leonis	6½	-48	-75	18 55.5	-11 58 19	-1.2342	0.5810	-0.1380	+9.4119	9.9850

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1868.

Date	Star's Name.	Magnitude.	Limiting - Parallels.		Wash- ington Mean Time of C.	At Washington Mean Time of Conjunction.					
			North- ern.	South- ern.		H	Y	p'	q'	Log sin D	Log cos D
April 29	18 Leonis	6	+90	+10	23 26.1	- 7 37 38	+0.7124	0.5790	-.1444	+9.3324	9.9897
	21 B.A.C. 3345	6	+90	+31	23 56.3	- 7 8 28	+1.0231	.5789	-.1449	+9.3192	.9903
	30 γ Leonis	5	- 4	-77	4 29.9	- 2 44 48	-0.7002	.5774	-.1509	+9.3544	.9886
	30 α Leonis	5	+90	+38	8 42.3	+ 1 18 28	+1.1200	.5757	-.1560	+9.2663	.9925
	30 α Leonis	1½	-17	-78	8 53.8	+ 1 29 32	-0.9064	.5757	-.1561	+9.3390	.9894
	30 B.A.C. 3538	6½	+90	+41	14 55.9	+ 7 18 43	+1.1601	.5737	-.1628	+9.2232	.9938
	30 44 Leonis	6	+90	+37	16 14.7	+ 8 34 47	+1.1205	.5732	-.1642	+9.2154	.9941
	30 B.A.C. 3562	6½	+90	+35	16 23.8	+ 8 43 32	+1.1066	.5729	-.1645	+9.2149	.9941
	30 45 Leonis	6	+33	-34	17 17.0	+ 9 34 51	-0.0456	.5728	-.1652	+9.2578	.9928
	30 ε Leonis	4	+37	-30	19 32.9	+11 45 56	+0.0337	.5720	-.1676	+9.2389	.9934
May 30	49 Leonis	6	+71	- 3	20 32.1	-11 17 2	+0.5327	.5717	-.1687	+9.2098	.9942
	1 c Leonis	5	+90	+35	7 54.3	- 0 18 39	+1.1233	.5679	-.1783	+9.0738	.9969
	1 ζ Leonis	5	+ 9	-64	9 49.0	+ 1 32 2	-0.4802	.5675	-.1797	+9.1460	.9957
	1 σ Leonis	4	+ 9	-64	17 0.9	+ 8 25 57	-0.4708	.5643	-.1844	+9.0702	.9970
	2 10 Virginis	6	+11	-62	15 0.4	+ 5 43 32	+0.4300	.5607	-.1928	+8.6627	.9995
	2 η Virginis	3½	+90	+53	19 41.0	+10 14 37	+1.2993	.5600	-.1935	+7.0529	.0000
	3 γ Virginis, pr.	2½	+45	-25	5 42.1	- 4 4 29	+0.1753	.5586	-.1934	-8.1039	.0000
	3 B.A.C. 4277	6	+43	-28	6 33.8	- 3 14 32	+0.1345	.5586	-.1934	-8.1713	.9999
	3 38 Virginis	6	+88	+60	10 58.8	+ 1 1 37	+1.3286	.5583	-.1928	-8.6946	.9995
	3 k Virginis	6	+87	+25	13 56.8	+ 3 53 45	+1.0287	.5580	-.1922	-8.7331	.9994
May 3	46 Virginis	6½	+67	- 8	14 22.9	+ 4 18 58	+0.4908	.5580	-.1920	-8.6665	.9995
	3 48 Virginis	6	+67	- 8	15 54.4	+ 5 47 23	+0.5021	.5578	-.1917	-8.7121	.9994
	4 65 Virginis	6	+42	-28	0 51.8	- 9 33 7	+0.1218	.5574	-.1886	-8.6683	.9988
	4 66 Virginis	6	+50	-21	1 25.3	- 9 0 41	+0.2648	.5574	-.1883	-8.8922	.9987
	4 f Virginis	5	+77	+ 7	4 51.5	- 5 41 24	+0.7607	.5574	-.1868	-8.9674	.9979
	4 80 Virginis	6	+11	-62	6 24.1	- 4 12 4	-0.4265	.5574	-.1859	-8.9158	.9985
	4 94 Virginis	6	+80	+ 2	20 41.8	+ 9 37 21	+0.6696	.5577	-.1769	-9.1574	.9955
	4 95 Virginis	6	+82	+29	20 53.7	+ 9 48 47	+1.0737	.5576	-.1768	-9.1789	.9950
	5 1 Libræ	6	+43	-24	18 50.7	+ 7 1 54	+0.2066	.5586	-.1566	-9.2944	.9914
	5 1 Libræ	6	+ 5	-66	19 56.9	+ 8 5 55	-0.4734	.5586	-.1566	-9.2757	.9921
May 5	18 Libræ, pr.	6½	-21	-90	20 56.4	+ 9 3 29	-0.9049	.5587	-.1543	-9.2652	.9925
	6 B.A.C. 5070	6	-54	-90	8 23.7	- 3 52 16	-1.2474	.5595	-.1406	-9.3142	.9906
	6 γ Libræ	4½	+60	- 1	13 41.3	+ 1 14 42	+0.6167	.5595	-.1339	-9.3941	.9862
	6 η Libræ	6	+75	+30	17 35.8	+ 5 1 19	+1.0622	.5600	-.1286	-9.4200	.9844
	7 48 Libræ	4½	-48	-90	0 5.3	+11 17 43	-1.1833	.5601	-.1198	-9.3805	.9871
	7 49 Libræ	5½	+74	+32	1 3.1	-11 46 24	+1.0919	.5603	-.1184	-9.4441	.9825
	7 φ Ophiuchi	5	+12	-49	15 6.6	+ 1 48 47	-0.2306	.5604	-.0973	-9.4487	.9821
	7 24 Scorpi	5	+61	- 3	19 51.0	+ 6 23 37	+0.5715	.5604	-.0897	-9.4777	.9795
	8 29 Ophiuchi	6	+72	+35	5 5.9	- 8 40 14	+1.1079	.5603	-.0748	-9.5057	.9765
	8 B.A.C. 5771	6½	- 3	-66	8 3.2	- 5 48 54	-0.4567	.5600	-.0699	-9.4765	.9796
May 8	B.A.C. 5839	6½	-12	-80	13 22.9	- 0 39 54	-0.6101	.5595	-.0607	-9.4809	.9791
	9 B.A.C. 6063	6½	+11	-43	5 54.8	- 8 41 17	-0.1318	.5577	-.0328	-9.5076	.9762
	9 B.A.C. 6257	6	- 6	-61	21 47.5	+ 6 39 46	-0.4014	.5560	-.0055	-9.5083	.9762
	9 B.A.C. 6292	6	+ 4	-48	22 19.3	+ 7 10 30	-0.2062	.5546	-.0049	-9.5124	.9757
	9 B.A.C. 6293	6½	-36	-90	22 22.2	+ 7 13 21	-0.9055	.5545	-.0044	-9.4980	.9773
	9 B.A.C. 6294	6	-26	-90	22 22.9	+ 7 14 0	-0.7520	.5545	-.0043	-9.5012	.9770
	10 B.A.C. 6536	6	+51	- 6	15 37.8	- 0 5 6	+0.5193	.5507	+0.0245	-9.5233	.9744
	10 d Sagittarii	5	+36	-18	20 3.9	+ 4 12 20	+0.3037	.5497	+0.0316	-9.5166	.9752
	10 e Sagittarii	4	-28	-90	22 0.5	+ 6 5 12	-0.8333	.5492	+0.0348	-9.4921	.9780
	10 e Sagittarii	5½	+ 1	-56	22 4.3	+ 6 8 55	-0.3279	.5492	+0.0348	-9.5025	.9768
May 11	B.A.C. 6658	6	+12	-43	1 2.7	+ 9 1 27	-0.1366	.5483	+0.0396	-9.5042	.9766
	11 57 Sagittarii	5½	+71	+57	12 34.6	- 3 48 52	+1.2563	.5450	+0.0579	-9.5208	.9747
	12 φ Capricor, pr.	5	+72	+63	6 25.3	-10 31 58	+1.2809	.5399	+0.0841	-9.4956	.9776
	12 B.A.C. 7043	6½	+72	+16	6 29.3	-10 28 8	+0.8668	.5398	+0.0842	-9.4868	.9785
	12 B.A.C. 7097	6	+33	-26	9 43.4	- 7 20 8	+0.1619	0.5390	+0.0884	-9.4653	.9806

**ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF
PLANETS AND STARS BY THE MOON, FOR THE YEAR 1868.**

Date	Star's Name.	Magnitude.	Limiting Parallels.		Wash- ington Mean Time of 6.	At Washington Mean Time of Conjunction.					
			North- ern.	South- ern.		<i>H</i>	<i>Y</i>	<i>p'</i>	<i>q'</i>	Log sin <i>D</i>	Log cos <i>D</i>
May 12	♄ Capricor	6	-66	-90	10 39.0	- 6 26 17	-1.2767	0.5388	+ 0699	-9.4296	9.9837
12	B.A.C. 7145	6½	+22	-38	12 12.5	- 4 55 37	-0.0401	.5383	+ .0918	-9.4556	.9815
13	♄ Capricor	6	+75	+11	5 44.1	-11 56 27	+0.8057	.5338	+ .1144	-9.4327	.9834
13	♑ Aquarii	6	-50	-90	10 0.9	- 7 47 30	-1.2103	.5328	+ .1194	-9.3663	.9879
13	B.A.C. 7487	6½	+34	-29	15 5.8	- 2 51 52	+0.1046	.5317	+ .1253	-9.3857	.9868
13	♄ Capricor	6	+76	+43	18 46.6	+ 0 42 12	+1.1981	.5309	+ .1294	-9.4024	.9857
14	♑ Aquarii	6	+16	-51	9 33.9	- 8 57 10	-0.2656	.5286	+ .1446	-9.2984	.9912
14	♑ Aquarii	6	+66	- 5	9 36.5	- 8 54 41	+0.5595	.5286	+ .1446	-9.3253	.9901
14	♑ Aquarii	4	+79	+36	19 52.8	+ 1 3 14	+1.1442	.5273	+ .1538	-9.2940	.9914
15	♑ Aquarii	6½	+80	+35	0 19.3	+ 5 21 48	+1.1332	.5272	+ .1574	-9.2692	.9924
15	♑ Aquarii	4	+ 9	-62	7 12.1	-11 57 40	-0.4315	.5269	+ .1627	-9.1584	.9954
15	♑ Aquarii	6	- 5	-86	8 12.8	-10 58 42	-0.6787	.5270	+ .1635	-9.1383	.9958
15	81 Aquarii	6	+20	-50	11 43.6	- 7 34 13	-0.2485	.5270	+ .1661	-9.1308	.9960
15	82 Aquarii	6	- 4	-86	12 19.1	- 6 59 42	-0.6820	.5269	+ .1663	-9.1028	.9965
15	♑ Aquarii	6	+82	+ 8	13 39.1	- 5 42 7	+0.7684	.5269	+ .1673	-9.1648	.9953
15	♑ Aquarii	7	+82	+13	13 44.2	- 5 37 12	+0.8484	.5269	+ .1674	-9.1679	.9952
15	♑ Aquarii	7	+82	+31	14 1.5	- 5 20 24	+1.0965	.5269	+ .1675	-9.1771	.9950
15	♑ Aquarii	7½	+82	+19	14 42.6	- 4 40 33	+0.9447	.5269	+ .1681	-9.1647	.9953
15	♑ Aquarii	4½	+21	-49	18 22.7	- 1 6 55	-0.2291	.5272	+ .1705	-9.0708	.9970
15	96 Aquarii	5½	-10	-90	20 58.9	+ 1 24 34	-0.7807	.5272	+ .1719	-9.0078	.9977
15	B.A.C. 8134	6½	-32	-90	22 0.5	+ 2 24 20	-1.0942	.5273	+ .1725	-8.9731	.9981
16	♑ Piscium	6	- 7	-90	11 37.6	- 8 22 52	-0.7520	.5288	+ .1794	-8.7851	.9982
16	24 Piscium	6½	+42	-28	14 10.5	- 5 54 37	+0.1311	.5294	+ .1804	-8.5311	.9990
16	27 Piscium	5½	+86	+30	17 6.7	- 3 3 41	+1.0960	.5299	+ .1815	-8.8739	.9988
16	29 Piscium	5½	+87	+11	18 42.6	- 1 30 36	+0.8173	.5301	+ .1821	-8.8170	.9991
17	♑ Ceti	6	+30	-40	7 14.9	+10 38 59	-0.0859	.5332	+ .1854	-8.1347	0.0000
17	14 Ceti	6½	+89	+43	11 43.3	- 9 0 50	+1.2266	.5347	+ .1861	-8.3325	.9999
18	33 Ceti	6	+90	+50	5 2.9	+ 7 46 37	+1.2788	.5411	+ .1862	+8.4828	.9998
18	♑ Piscium	6	+87	+ 3	8 34.4	+11 11 28	+0.6861	.5429	+ .1866	+8.7067	.9994
18	B.A.C. 408	6½	+32	-39	10 57.0	-10 30 26	-0.0667	.5436	+ .1852	+8.8485	.9969
18	♑ Piscium	4½	-16	-85	14 31.1	- 7 3 8	-0.8995	.5455	+ .1842	+8.9784	.9980
18	♑ Piscium	4½	+90	+ 9	19 56.1	- 1 48 31	+0.7714	.5480	+ .1826	+8.9241	.9985
19	64 Ceti	6½	+36	-33	9 59.3	+11 47 6	+0.0096	.5556	+ .1758	+9.1408	.9958
19	♑ Ceti	4½	+27	-41	10 44.3	-11 29 19	-0.1454	.5562	+ .1753	+9.1555	.9955
19	B.A.C. 741	6½	+26	-42	15 59.5	- 6 24 43	-0.1586	.5592	+ .1718	+9.1997	.9945
19	♑ Arietis	5½	-28	-71	16 9.5	- 6 15 0	-1.0615	.5592	+ .1717	+9.2400	.9933
19	B.A.C. 755	6	-14	-80	17 2.8	- 5 23 27	-0.8638	.5598	+ .1711	+9.2382	.9934
20	B.A.C. 830	6	+42	-25	0 11.1	+ 1 30 17	+0.1226	.5639	+ .1653	+9.2471	.9931
20	♑ Ceti	4	+90	+23	1 16.9	+ 2 33 49	+0.9456	.5645	+ .1644	+9.2200	.9939
22	111 Tauri	6	+90	+45	20 5.7	- 5 5 19	+1.0922	.6014	+ .0631	+9.4722	.9800
22	115 Tauri	5½	+76	+10	21 11.1	- 4 2 27	+0.5687	.6016	+ .0609	+9.4863	.9786
22	119 Tauri	5½	+37	-18	23 10.2	- 2 8 4	+0.0339	.6023	+ .0567	+9.5013	.9770
22	120 Tauri	6	+42	-14	23 41.5	- 1 38 1	+0.1132	.6026	+ .0554	+9.5001	.9771
22	130 Tauri	6	+90	+53	5 11.7	+ 3 39 9	+1.1564	.6041	+ .0440	+9.4823	.9790
23	♌ Orionis	6	-10	-71	8 6.1	+ 6 26 38	-0.7789	.6046	+ .0377	+9.5281	.9737
23	♌ Orionis	5	- 1	-61	11 26.4	+ 9 39 0	-0.6333	.6055	+ .0300	+9.5275	.9738
23	♌ Orionis	5	-33	-70	11 36.6	+ 9 48 50	-1.0789	.6055	+ .0297	+9.5369	.9726
23	68 Orionis	6	- 3	-64	14 47.4	-11 8 0	-0.6717	.6058	+ .0228	+9.5302	.9735
23	71 Orionis	5½	+34	-18	15 54.9	-10 3 14	-0.0263	.6059	+ .0204	+9.5169	.9752
23	♊ Geminor	4½	-30	-70	21 23.8	- 4 47 25	-1.0457	.6065	+ .0079	+9.5400	.9722
24	B.A.C. 2432	6½	+61	+ 3	18 34.8	- 8 27 17	+0.4010	.6049	- .0393	+9.5020	.9769
25	♊ Geminor	6	+87	+16	1 1.7	- 2 15 44	+0.6580	.6035	- .0526	+9.4893	.9783
25	♊ Geminor	5½	+16	-41	3 38.2	+ 0 14 31	-0.3451	.6023	- .0583	+9.5088	.9761
25	♌ Canceri	6	+65	+ 3	9 27.6	+ 5 50 12	+0.4442	.6009	- .0705	+9.4821	.9790
25	5 Canceri	6	+90	+69	9 45.6	+ 6 7 30	+1.2756	0.6009	- .0709	+9.4613	.9810

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1868.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of δ .	At Washington Mean Time of Conjunction.						
			North-ern.	South-ern.		H	Y	p'	q'	Log sin D	Log cos D	
May	25	B.A.C. 2683	6	-49	-71	11 0.5	+ 7 19 23	-1.2162	0.6006	-.0732	+9.5173	9.9751
	25 <th>B.A.C. 2731</th> <td>6½</td> <td>+64</td> <td>+ 2</td> <td>13 8.1</td> <td>+ 9 22 1</td> <td>+0.4393</td> <td>.5999</td> <td>-.0776</td> <td>+9.4757</td> <td>.9796</td>	B.A.C. 2731	6½	+64	+ 2	13 8.1	+ 9 22 1	+0.4393	.5999	-.0776	+9.4757	.9796
	25 <th>ϵ^1 Cancri</th> <td>4½</td> <td>+20</td> <td>-38</td> <td>13 59.7</td> <td>+10 11 37</td> <td>-0.2718</td> <td>.5995</td> <td>-.0794</td> <td>+9.4909</td> <td>.9781</td>	ϵ^1 Cancri	4½	+20	-38	13 59.7	+10 11 37	-0.2718	.5995	-.0794	+9.4909	.9781
	25 <th>ϵ^2 Cancri</th> <td>7½</td> <td>+20</td> <td>-38</td> <td>13 59.8</td> <td>+10 11 43</td> <td>-0.2692</td> <td>.5995</td> <td>-.0794</td> <td>+9.4909</td> <td>.9781</td>	ϵ^2 Cancri	7½	+20	-38	13 59.8	+10 11 43	-0.2692	.5995	-.0794	+9.4909	.9781
	25 <th>δ^2 Cancri</th> <td>6</td> <td>+26</td> <td>-33</td> <td>19 28.5</td> <td>- 8 32 22</td> <td>-0.1706</td> <td>.5972</td> <td>-.0903</td> <td>+9.4776</td> <td>.9795</td>	δ^2 Cancri	6	+26	-33	19 28.5	- 8 32 22	-0.1706	.5972	-.0903	+9.4776	.9795
	26 <th>54 Cancri</th> <td>6½</td> <td>+66</td> <td>0</td> <td>5 41.7</td> <td>+ 1 17 7</td> <td>+0.4590</td> <td>.5929</td> <td>-1.090</td> <td>+9.4360</td> <td>.9832</td>	54 Cancri	6½	+66	0	5 41.7	+ 1 17 7	+0.4590	.5929	-1.090	+9.4360	.9832
	26 <th>α^1 Cancri</th> <td>6</td> <td>+47</td> <td>-15</td> <td>8 13.6</td> <td>+ 3 43 13</td> <td>+0.1888</td> <td>.5918</td> <td>-1.131</td> <td>+9.4357</td> <td>.9832</td>	α^1 Cancri	6	+47	-15	8 13.6	+ 3 43 13	+0.1888	.5918	-1.131	+9.4357	.9832
	26 <th>α^2 Cancri</th> <td>6</td> <td>+30</td> <td>-31</td> <td>8 21.6</td> <td>+ 3 50 56</td> <td>-0.0871</td> <td>.5917</td> <td>-1.133</td> <td>+9.4426</td> <td>.9826</td>	α^2 Cancri	6	+30	-31	8 21.6	+ 3 50 56	-0.0871	.5917	-1.133	+9.4426	.9826
	26 <th>π^1 Cancri</th> <td>6½</td> <td>+21</td> <td>-41</td> <td>14 27.4</td> <td>+ 9 42 51</td> <td>-0.2473</td> <td>.5887</td> <td>-1.238</td> <td>+9.4276</td> <td>.9838</td>	π^1 Cancri	6½	+21	-41	14 27.4	+ 9 42 51	-0.2473	.5887	-1.238	+9.4276	.9838
	26 <th>π^2 Cancri</th> <td>6</td> <td>+15</td> <td>-48</td> <td>15 38.5</td> <td>+10 51 17</td> <td>-0.3559</td> <td>.5882</td> <td>-1.256</td> <td>+9.4265</td> <td>.9839</td>	π^2 Cancri	6	+15	-48	15 38.5	+10 51 17	-0.3559	.5882	-1.256	+9.4265	.9839
	27 <th>7 Leonis</th> <td>6</td> <td>-22</td> <td>-75</td> <td>0 15.9</td> <td>- 4 50 38</td> <td>-0.9707</td> <td>.5838</td> <td>-1.384</td> <td>+9.4120</td> <td>.9850</td>	7 Leonis	6	-22	-75	0 15.9	- 4 50 38	-0.9707	.5838	-1.384	+9.4120	.9850
	27 <th>18 Leonis</th> <td>6</td> <td>+90</td> <td>+27</td> <td>4 43.7</td> <td>- 0 32 40</td> <td>+0.9685</td> <td>.5814</td> <td>-1.447</td> <td>+9.3324</td> <td>.9897</td>	18 Leonis	6	+90	+27	4 43.7	- 0 32 40	+0.9685	.5814	-1.447	+9.3324	.9897
	27 <th>B.A.C. 3345</th> <td>6</td> <td>+90</td> <td>+59</td> <td>5 13.7</td> <td>- 0 3 45</td> <td>+1.2782</td> <td>.5813</td> <td>-1.453</td> <td>+9.3192</td> <td>.9903</td>	B.A.C. 3345	6	+90	+59	5 13.7	- 0 3 45	+1.2782	.5813	-1.453	+9.3192	.9903
	27 <th>ν Leonis</th> <td>5</td> <td>+11</td> <td>-57</td> <td>9 45.1</td> <td>+ 4 17 45</td> <td>-0.4376</td> <td>.5790</td> <td>-1.513</td> <td>+9.3544</td> <td>.9886</td>	ν Leonis	5	+11	-57	9 45.1	+ 4 17 45	-0.4376	.5790	-1.513	+9.3544	.9886
	27 <th>α Leonis</th> <td>1½</td> <td>- 1</td> <td>-73</td> <td>14 7.3</td> <td>+ 8 30 26</td> <td>-0.6436</td> <td>.5769</td> <td>-1.565</td> <td>+9.3390</td> <td>.9894</td>	α Leonis	1½	- 1	-73	14 7.3	+ 8 30 26	-0.6436	.5769	-1.565	+9.3390	.9894
	27 <th>45 Leonis</th> <td>6</td> <td>+48</td> <td>-20</td> <td>22 28.8</td> <td>- 7 26 6</td> <td>+0.2144</td> <td>.5725</td> <td>-1.657</td> <td>+9.2578</td> <td>.9928</td>	45 Leonis	6	+48	-20	22 28.8	- 7 26 6	+0.2144	.5725	-1.657	+9.2578	.9928
	28 <th>ϕ Leonis</th> <td>4</td> <td>+53</td> <td>-16</td> <td>0 44.4</td> <td>- 5 15 15</td> <td>+0.2933</td> <td>.5716</td> <td>-1.680</td> <td>+9.2389</td> <td>.9934</td>	ϕ Leonis	4	+53	-16	0 44.4	- 5 15 15	+0.2933	.5716	-1.680	+9.2389	.9934
	28 <th>49 Leonis</th> <td>6</td> <td>+90</td> <td>+12</td> <td>1 43.5</td> <td>- 4 18 14</td> <td>+0.7914</td> <td>.5711</td> <td>-1.689</td> <td>+9.2098</td> <td>.9942</td>	49 Leonis	6	+90	+12	1 43.5	- 4 18 14	+0.7914	.5711	-1.689	+9.2098	.9942
	28 <th>χ Leonis</th> <td>5</td> <td>+23</td> <td>-46</td> <td>15 2.0</td> <td>+ 8 32 22</td> <td>-0.2267</td> <td>.5653</td> <td>-1.798</td> <td>+9.1461</td> <td>.9957</td>	χ Leonis	5	+23	-46	15 2.0	+ 8 32 22	-0.2267	.5653	-1.798	+9.1461	.9957
	28 <th>σ Leonis</th> <td>4</td> <td>+23</td> <td>-47</td> <td>22 16.4</td> <td>- 8 28 11</td> <td>-0.2226</td> <td>.5626</td> <td>-1.843</td> <td>+9.0702</td> <td>.9970</td>	σ Leonis	4	+23	-47	22 16.4	- 8 28 11	-0.2226	.5626	-1.843	+9.0702	.9970
	29 <th>b Virginis</th> <td>6</td> <td>-35</td> <td>-86</td> <td>16 0.3</td> <td>+ 8 30 47</td> <td>-1.1471</td> <td>.5568</td> <td>-1.916</td> <td>+8.8838</td> <td>.9987</td>	b Virginis	6	-35	-86	16 0.3	+ 8 30 47	-1.1471	.5568	-1.916	+8.8838	.9987
	29 <th>10 Virginis</th> <td>6</td> <td>+24</td> <td>-47</td> <td>20 30.2</td> <td>-10 59 24</td> <td>-0.2098</td> <td>.5555</td> <td>-1.924</td> <td>+8.6629</td> <td>9.9905</td>	10 Virginis	6	+24	-47	20 30.2	-10 59 24	-0.2098	.5555	-1.924	+8.6629	9.9905
	30 <th>γ Virginis, pr.</th> <td>2½</td> <td>+59</td> <td>-15</td> <td>11 25.8</td> <td>+ 3 26 36</td> <td>+0.3815</td> <td>.5526</td> <td>-1.931</td> <td>-8.1035</td> <td>0.0000</td>	γ Virginis, pr.	2½	+59	-15	11 25.8	+ 3 26 36	+0.3815	.5526	-1.931	-8.1035	0.0000
	30 <th>B.A.C. 4277</th> <td>6</td> <td>+56</td> <td>-17</td> <td>12 18.4</td> <td>+ 4 17 29</td> <td>+0.3388</td> <td>.5525</td> <td>-1.930</td> <td>-8.1710</td> <td>9.9999</td>	B.A.C. 4277	6	+56	-17	12 18.4	+ 4 17 29	+0.3388	.5525	-1.930	-8.1710	9.9999
	30 <th>k Virginis</th> <td>6</td> <td>+87</td> <td>+43</td> <td>19 49.5</td> <td>+11 33 50</td> <td>+1.2269</td> <td>.5516</td> <td>-1.917</td> <td>-8.7330</td> <td>.9994</td>	k Virginis	6	+87	+43	19 49.5	+11 33 50	+1.2269	.5516	-1.917	-8.7330	.9994
	30 <th>46 Virginis</th> <td>6½</td> <td>+85</td> <td>+ 2</td> <td>20 16.1</td> <td>+11 59 34</td> <td>+0.6841</td> <td>.5514</td> <td>-1.916</td> <td>-8.6664</td> <td>.9995</td>	46 Virginis	6½	+85	+ 2	20 16.1	+11 59 34	+0.6841	.5514	-1.916	-8.6664	.9995
	30 <th>43 Virginis</th> <td>6</td> <td>+86</td> <td>+ 3</td> <td>21 49.3</td> <td>-10 30 17</td> <td>+0.6929</td> <td>.5514</td> <td>-1.913</td> <td>-8.7120</td> <td>.9994</td>	43 Virginis	6	+86	+ 3	21 49.3	-10 30 17	+0.6929	.5514	-1.913	-8.7120	.9994
	31 <th>65 Virginis</th> <td>6</td> <td>+52</td> <td>-19</td> <td>6 57.2</td> <td>- 1 40 17</td> <td>+0.2932</td> <td>.5508</td> <td>-1.883</td> <td>-8.8682</td> <td>.9988</td>	65 Virginis	6	+52	-19	6 57.2	- 1 40 17	+0.2932	.5508	-1.883	-8.8682	.9988
	31 <th>66 Virginis</th> <td>6</td> <td>+62</td> <td>-12</td> <td>7 31.4</td> <td>- 1 7 10</td> <td>+0.4361</td> <td>.5507</td> <td>-1.880</td> <td>-8.8921</td> <td>.9987</td>	66 Virginis	6	+62	-12	7 31.4	- 1 7 10	+0.4361	.5507	-1.880	-8.8921	.9987
	31 <th>β Virginis</th> <td>5</td> <td>+85</td> <td>+18</td> <td>10 1.7</td> <td>+ 1 16 16</td> <td>+0.9287</td> <td>.5507</td> <td>-1.865</td> <td>-8.9874</td> <td>.9979</td>	β Virginis	5	+85	+18	10 1.7	+ 1 16 16	+0.9287	.5507	-1.865	-8.9874	.9979
	31 <th>80 Virginis</th> <td>6</td> <td>+20</td> <td>-51</td> <td>12 42.3</td> <td>+ 3 53 37</td> <td>-0.2710</td> <td>.5507</td> <td>-1.857</td> <td>-8.9158</td> <td>.9985</td>	80 Virginis	6	+20	-51	12 42.3	+ 3 53 37	-0.2710	.5507	-1.857	-8.9158	.9985
June	1 <th>94 Virginis</th> <td>6</td> <td>+82</td> <td>+10</td> <td>3 11.4</td> <td>- 6 5 35</td> <td>+0.8032</td> <td>.5509</td> <td>-1.770</td> <td>-9.1574</td> <td>.9955</td>	94 Virginis	6	+82	+10	3 11.4	- 6 5 35	+0.8032	.5509	-1.770	-9.1574	.9955
	1 <th>95 Virginis</th> <td>6</td> <td>+82</td> <td>+42</td> <td>3 23.5</td> <td>- 5 53 54</td> <td>+1.2109</td> <td>.5509</td> <td>-1.768</td> <td>-9.1789</td> <td>.9950</td>	95 Virginis	6	+82	+42	3 23.5	- 5 53 54	+1.2109	.5509	-1.768	-9.1789	.9950
	2 <th>ϵ^1 Libræ</th> <td>6</td> <td>+48</td> <td>-20</td> <td>1 46.1</td> <td>- 8 15 3</td> <td>+0.2853</td> <td>.5528</td> <td>-1.573</td> <td>-9.2944</td> <td>.9914</td>	ϵ^1 Libræ	6	+48	-20	1 46.1	- 8 15 3	+0.2853	.5528	-1.573	-9.2944	.9914
	2 <th>ϵ^2 Libræ</th> <td>6</td> <td>+ 9</td> <td>-61</td> <td>2 53.4</td> <td>- 7 9 57</td> <td>-0.4022</td> <td>.5530</td> <td>-1.562</td> <td>-9.2757</td> <td>.9921</td>	ϵ^2 Libræ	6	+ 9	-61	2 53.4	- 7 9 57	-0.4022	.5530	-1.562	-9.2757	.9921
	2 <th>18 Libræ, pr.</th> <td>6½</td> <td>-16</td> <td>-90</td> <td>3 54.1</td> <td>- 6 11 18</td> <td>-0.8395</td> <td>.5533</td> <td>-1.551</td> <td>-9.2652</td> <td>.9925</td>	18 Libræ, pr.	6½	-16	-90	3 54.1	- 6 11 18	-0.8395	.5533	-1.551	-9.2652	.9925
	2 <th>B.A.C. 5070</th> <td>6</td> <td>-48</td> <td>-90</td> <td>15 32.5</td> <td>+ 5 4 11</td> <td>-1.2106</td> <td>.5546</td> <td>-1.418</td> <td>-9.3142</td> <td>.9906</td>	B.A.C. 5070	6	-48	-90	15 32.5	+ 5 4 11	-1.2106	.5546	-1.418	-9.3142	.9906
	2 <th>γ Libræ</th> <td>4½</td> <td>+72</td> <td>+ 1</td> <td>20 55.5</td> <td>+10 16 29</td> <td>+0.6522</td> <td>.5553</td> <td>-1.353</td> <td>-9.3941</td> <td>.9862</td>	γ Libræ	4½	+72	+ 1	20 55.5	+10 16 29	+0.6522	.5553	-1.353	-9.3941	.9862
	3 <th>η Libræ</th> <td>6</td> <td>+75</td> <td>+32</td> <td>0 53.3</td> <td>- 9 53 31</td> <td>+1.0904</td> <td>.5558</td> <td>-1.301</td> <td>-9.4200</td> <td>.9844</td>	η Libræ	6	+75	+32	0 53.3	- 9 53 31	+1.0904	.5558	-1.301	-9.4200	.9844
	3 <th>48 Libræ</th> <td>4½</td> <td>-48</td> <td>-90</td> <td>7 28.0</td> <td>- 3 31 55</td> <td>-1.1839</td> <td>.5565</td> <td>-1.211</td> <td>-9.3805</td> <td>.9871</td>	48 Libræ	4½	-48	-90	7 28.0	- 3 31 55	-1.1839	.5565	-1.211	-9.3805	.9871
	3 <th>49 Libræ</th> <td>5½</td> <td>+74</td> <td>+33</td> <td>8 27.0</td> <td>- 2 34 50</td> <td>+1.1013</td> <td>.5567</td> <td>-1.198</td> <td>-9.4441</td> <td>.9825</td>	49 Libræ	5½	+74	+33	8 27.0	- 2 34 50	+1.1013	.5567	-1.198	-9.4441	.9825
	3 <th>ϕ Ophiuchi</th> <td>5</td> <td>+11</td> <td>-51</td> <td>22 39.1</td> <td>+11 8 57</td> <td>-0.2616</td> <td>.5582</td> <td>-0.991</td> <td>-9.4487</td> <td>.9821</td>	ϕ Ophiuchi	5	+11	-51	22 39.1	+11 8 57	-0.2616	.5582	-0.991	-9.4487	.9821
	4 <th>24 Scorpii</th> <td>5</td> <td>+58</td> <td>- 5</td> <td>3 26.0</td> <td>- 8 13 48</td> <td>+0.5335</td> <td>.5583</td> <td>-0.915</td> <td>-9.4777</td> <td>.9795</td>	24 Scorpii	5	+58	- 5	3 26.0	- 8 13 48	+0.5335	.5583	-0.915	-9.4777	.9795
	4 <th>B.A.C. 5695</th> <td>6</td> <td>-36</td> <td>-90</td> <td>10 6.5</td> <td>- 1 46 40</td> <td>-1.0039</td> <td>.5587</td> <td>-0.812</td> <td>-9.4557</td> <td>.9815</td>	B.A.C. 5695	6	-36	-90	10 6.5	- 1 46 40	-1.0039	.5587	-0.812	-9.4557	.9815
	4 <th>29 Ophiuchi</th> <td>6</td> <td>+72</td> <td>+30</td> <td>12 44.6</td> <td>+ 0 46 11</td> <td>+1.0527</td> <td>.5589</td> <td>-0.768</td> <td>-9.5057</td> <td>.9765</td>	29 Ophiuchi	6	+72	+30	12 44.6	+ 0 46 11	+1.0527	.5589	-0.768	-9.5057	.9765
	4 <th>B.A.C. 5771</th> <td>6½</td> <td>- 7</td> <td>-72</td> <td>15 42.8</td> <td>+ 3 38 28</td> <td>-0.5243</td> <td>.5590</td> <td>-0.719</td> <td>-9.4766</td> <td>.9796</td>	B.A.C. 5771	6½	- 7	-72	15 42.8	+ 3 38 28	-0.5243	.5590	-0.719	-9.4766	.9796
	4 <th>B.A.C. 5839</th> <td>6½</td> <td>-17</td> <td>-90</td> <td>21 4.0</td> <td>+ 8 48 54</td> <td>-0.6926</td> <td>.5589</td> <td>-0.631</td> <td>-9.4809</td> <td>.9791</td>	B.A.C. 5839	6½	-17	-90	21 4.0	+ 8 48 54	-0.6926	.5589	-0.631	-9.4809	.9791
	5 <th>B.A.C. 6060</th> <td>6½</td> <td>+ 5</td> <td>-51</td> <td>13 38.0</td> <td>+ 0 49 38</td> <td>-0.2473</td> <td>.5563</td> <td>-0.348</td> <td>-9.5076</td> <td>.9762</td>	B.A.C. 6060	6½	+ 5	-51	13 38.0	+ 0 49 38	-0.2473	.5563	-0.348	-9.5076	.9762
	6 <th>B.A.C. 6287</th> <td>6</td> <td>-14</td> <td>-74</td> <td>5 29.9</td> <td>- 7 50 9</td> <td>-0.5502</td> <td>.5563</td> <td>-0.073</td> <td>-9.5083</td> <td>.9762</td>	B.A.C. 6287	6	-14	-74	5 29.9	- 7 50 9	-0.5502	.5563	-0.073	-9.5083	.9762
	6 <th>B.A.C. 6292</th> <td>6</td> <td>- 4</td> <td>-58</td> <td>6 1.6</td> <td>- 7 19 30</td> <td>-0.3537</td> <td>.5563</td> <td>-0.066</td> <td>-9.5124</td> <td>.9757</td>	B.A.C. 6292	6	- 4	-58	6 1.6	- 7 19 30	-0.3537	.5563	-0.066	-9.5124	.9757
	6 <th>B.A.C. 6293</th> <td>6½</td> <td>-47</td> <td>-90</td> <td>6 4.5</td> <td>- 7 16 40</td> <td>-1.0566</td> <td>.5563</td> <td>-0.066</td> <td>-9.4980</td> <td>.9773</td>	B.A.C. 6293	6½	-47	-90	6 4.5	- 7 16 40	-1.0566	.5563	-0.066	-9.4980	.9773
	6 <th>B.A.C. 6294</th> <td>6</td> <td>-36</td> <td>-90</td> <td>6 5.2</td> <td>- 7 16 0</td> <td>-0.9026</td> <td>.5563</td> <td>-0.065</td> <td>-9.5012</td> <td>.9770</td>	B.A.C. 6294	6	-36	-90	6 5.2	- 7 16 0	-0.9026	.5563	-0.065	-9.5012	.9770
	6 <th>B.A.C. 6536</th> <td>6</td> <td>+38</td> <td>-16</td> <td>23 16.8</td> <td>+ 9 21 37</td> <td>+0.3383</td> <td>.5530</td> <td>+0.0226</td> <td>-9.5233</td> <td>.9744</td>	B.A.C. 6536	6	+38	-16	23 16.8	+ 9 21 37	+0.3383	.5530	+0.0226	-9.5233	.9744
	7 <th>d Sagittarii</th> <td>5</td> <td>+25</td> <td>-29</td> <td>3 41.8</td> <td>-10 22 1</td> <td>+0.1146</td> <td>.5518</td> <td>+0.0302</td> <td>-9.5166</td> <td>.9752</td>	d Sagittarii	5	+25	-29	3 41.8	-10 22 1	+0.1146	.5518	+0.0302	-9.5166	.9752
	7 <th>ϵ^1 Sagittarii</th> <td>4</td> <td>-42</td> <td>-90</td> <td>5 38.0</td> <td>- 8 29 39</td> <td>-1.0266</td> <td>0.5513</td> <td>+0.0334</td> <td>-9.4921</td> <td>9.9780</td>	ϵ^1 Sagittarii	4	-42	-90	5 38.0	- 8 29 39	-1.0266	0.5513	+0.0334	-9.4921	9.9780

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF
PLANETS AND STARS BY THE MOON, FOR THE YEAR 1868.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of δ .	At Washington Mean Time of Conjunction.						Log $\sin D$	Log $\cos D$
			North- ern.	South- ern.		H	Y	p'	q'				
June 7	ϵ^3 Sagittarii	5½	-10	-72	h m	h m s	-0.5209	0.5512	+0.0335	-9.5025	9.9768		
	B.A.C. 6658	6	+1	-57	8 39.3	-5 34 15	-0.3345	.5507	+0.0381	-9.5042	.9766		
	57 Sagittarii	5½	+71	+30	20 8.1	+5 32 18	+1.0440	.5473	+0.0565	-9.5208	.9747		
	ϵ Capricor, pr.	5	+72	+29	13 54.6	-1 15 2	+1.0411	.5388	+0.0831	-9.4956	.9776		
	B.A.C. 7043	6½	+65	0	13 58.6	-1 11 9	+0.6262	.5417	+0.0832	-9.4868	.9785		
	B.A.C. 7097	6	+20	-40	17 12.0	+1 56 11	-0.0836	.5409	+0.0876	-9.4653	.9806		
	B.A.C. 7145	6½	+9	-53	19 40.8	+4 20 17	-0.2890	.5398	+0.0912	-9.4556	.9815		
	29 Capricor	6	+61	-5	13 10.6	-2 42 22	+0.5398	.5346	+0.1137	-9.4327	.9834		
	B.A.C. 7487	6½	+19	-45	22 32.5	+6 22 30	-0.1710	.5317	+0.1248	-9.3856	.9868		
	42 Capricor	6	+76	+19	2 13.6	+9 56 55	+0.9230	.5310	+0.1257	-9.4024	.9857		
10	μ Capricor	5	+76	+42	8 11.1	-8 16 24	+1.1965	.5293	+0.1350	-9.3887	.9866		
	ϵ^2 Aquarii	6	0	-73	17 4.2	+0 20 51	-0.5539	.5273	+0.1437	-9.2984	.9912		
	ϵ^3 Aquarii	6	+47	-20	17 6.8	+0 23 22	+0.2743	.5272	+0.1438	-9.3263	.9901		
	σ Aquarii	4	+79	+14	3 27.1	+10 25 17	+0.8588	.5254	+0.1531	-9.2940	.9914		
	58 Aquarii	6	+79	+41	3 59.1	+10 56 18	+1.1921	.5253	+0.1535	-9.3025	.9911		
	64 Aquarii	6½	+80	+13	7 55.8	-9 13 57	+0.8472	.5247	+0.1567	-9.2691	.9924		
	1 Aquarii	4	-7	-90	14 52.5	-2 29 31	-0.7258	.5240	+0.1619	-9.1583	.9954		
	78 Aquarii	6	-23	-90	15 53.9	-1 29 55	-0.9745	.5238	+0.1627	-9.1382	.9958		
	81 Aquarii	6	+4	-71	19 27.0	+1 56 54	-0.5415	.5236	+0.1652	-9.1307	.9960		
	82 Aquarii	6	-23	-90	20 2.9	+2 31 48	-0.9775	.5236	+0.1654	-9.1027	.9965		
11	λ^1 Aquarii	6	+64	-9	21 23.8	+3 50 19	+0.4816	.5236	+0.1665	-9.1647	.9953		
	λ^2 Aquarii	7	+70	-5	21 29.0	+3 55 17	+0.5621	.5235	+0.1667	-9.1678	.9952		
	λ^3 Aquarii	7	+82	+10	21 46.5	+4 12 19	+0.8117	.5235	+0.1667	-9.1770	.9950		
	λ^4 Aquarii	7½	+79	+1	22 28.0	+4 52 38	+0.6592	.5235	+0.1672	-9.1647	.9953		
	φ Aquarii	4½	+5	-70	2 10.9	+8 29 0	-0.5209	.5232	+0.1694	-9.0706	.9970		
	96 Aquarii	5½	-30	-90	4 49.1	+11 2 32	-1.0752	.5232	+0.1710	-9.0077	.9977		
	20 Piscium	6	-26	-90	19 40.8	+1 28 4	-1.0399	.5238	+0.1783	-8.7849	.9992		
	24 Piscium	6½	+27	-44	22 16.1	+3 58 49	-0.1490	.5242	+0.1793	-8.8310	.9990		
	27 Piscium	5½	+86	+11	1 15.3	+6 52 42	+0.8251	.5246	+0.1804	-8.8736	.9988		
	29 Piscium	5½	+71	-6	2 52.8	+8 27 24	+0.5456	.5248	+0.1810	-8.8168	.9991		
13	10 Ceti	6	+16	-57	15 38.6	-3 9 30	-0.3520	.5273	+0.1843	-8.1339	0.0000		
	14 Ceti	6½	+89	+21	20 12.0	+1 15 43	+0.9754	.5286	+0.1850	-8.3320	0.9999		
	15 Ceti	6	+89	+32	20 59.7	+2 1 55	+0.1202	.5288	+0.1852	-8.3313	.9999		
	33 Ceti	6	+90	+27	13 51.8	-5 36 40	+1.0510	.5346	+0.1853	+8.4831	.9998		
	35 Ceti	6½	+90	+40	14 50.8	-4 39 25	+1.1998	.5351	+0.1852	+8.4907	.9998		
	f Piscium	6	+64	-10	17 27.3	-2 7 44	+0.4601	.5364	+0.1848	+8.7069	.9994		
	B.A.C. 408	6½	+21	-51	19 52.7	+0 13 9	-0.2696	.5373	+0.1845	+8.8487	.9989		
	μ Piscium	4½	-33	-85	23 30.8	+3 44 30	-1.1262	.5393	+0.1836	+8.9785	.9980		
	ν Piscium	4½	+73	-4	5 1.8	+9 5 8	+0.5655	.5417	+0.1821	+8.9243	.9985		
	64 Ceti	6½	+26	-43	19 19.5	-1 4 38	-0.1737	.5499	+0.1758	+9.1409	.9958		
15	ξ^1 Ceti	4½	+17	-53	20 5.4	-0 10 18	-0.3281	.5504	+0.1752	+9.1555	.9955		
	B.A.C. 741	6½	+18	-52	1 27.4	+4 51 12	-0.3243	.5539	+0.1720	+9.1998	.9945		
	ξ Arietis	5½	-45	-80	1 35.5	+4 59 1	-1.2365	.5539	+0.1719	+9.2401	.9933		
	B.A.C. 755	6	-26	-80	2 29.7	+5 51 22	-1.0363	.5545	+0.1713	+9.2382	.9934		
	ξ^2 Ceti	4	+90	+53	3 10.3	+6 30 42	+1.2726	.5549	+0.1710	+9.1362	.9959		
	B.A.C. 830	6	+34	-34	9 43.8	-11 8 58	-0.0297	.5592	+0.1659	+9.2471	.9931		
	μ Ceti	4	+90	+13	10 50.4	-10 4 37	+0.7989	.5599	+0.1650	+9.2200	.9939		
	f Tauri	4	+90	+24	7 12.3	+9 34 49	+0.9281	.5744	+0.1441	+9.3347	.9896		
	Weil. III. 1085	8½	+79	+6	21 21.5	-0 46 49	+0.6017	.5847	+0.1247	+9.4033	.9856		
	Weil. IV. 24	9	+90	+12	0 3.2	+1 48 50	+0.6989	.5866	+0.1204	+9.4098	.9852		
18	Lal. 7753	7½	+35	-27	0 8.0	+1 53 29	-0.0123	.5865	+0.1203	+9.4296	.9837		
	B.A.C. 1281	7	-5	-74	0 10.7	+1 56 1	-0.7183	.5867	+0.1202	+9.4482	.9822		
	Rumk. 1103	7	+56	-8	0 14.6	+1 59 50	+0.3359	.5867	+0.1202	+9.4208	.9844		
	Rumk. 1108	9	+90	+38	0 41.2	+2 25 24	+1.0765	.5872	+0.1193	+9.4012	.9858		
	48 Tauri	6	+90	+17	2 9.0	+3 49 59	+0.7670	0.5880	+0.1171	+9.4148	.9848		

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1868.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Wash- ington Mean Time of δ.	At Washington Mean Time of Conjunction.					
			North- ern.	South- ern.		H	Y	p'	q'	Log sin D	Log cos D
June 18	Rumk. 1136	6	+35	-27	2 34.3	+ 4 14 19	-0.0124	0.5884	+1.162	+9.4372	9.9831
18	γ Tauri	4	+90	+14	3 48.4	+ 5 25 38	+0.7165	.5895	+1.144	+9.4215	.9843
18	55 Tauri	7	+25	-37	3 50.4	+ 5 27 30	-0.1876	.5895	+1.143	+9.4456	.9824
18	58 Tauri	6	+90	+69	4 9.2	+ 5 45 36	+1.2827	.5897	+1.136	+9.4065	.9854
18	Rumk. 1161		-43	-73	4 27.3	+ 6 3 1	-1.1882	.5898	+1.133	+9.4723	.9800
18	Rumk. 1163	8	+13	-50	4 30.4	+ 6 6 4	-0.4028	.5899	+1.132	+9.4530	.9818
18	δ ¹ Tauri	4	-32	-73	5 3.6	+ 6 38 2	-1.0894	.5901	+1.123	+9.4715	.9801
18	63 Tauri	6	+19	-43	5 16.5	+ 6 50 24	-0.2936	.5903	+1.119	+9.4524	.9818
18	B.A.C. 1351	6½	+27	-34	5 18.0	+ 6 51 49	-0.1408	.5903	+1.119	+9.4486	.9821
18	δ ² Tauri	6	-20	-73	5 32.4	+ 7 5 39	-0.9399	.5904	+1.115	+9.4692	.9803
18	Lal. 8949	7½	+ 4	-61	5 39.3	+ 7 12 22	-0.5594	.5905	+1.113	+9.4602	.9811
18	70 Tauri	7	+85	+10	6 11.9	+ 7 43 41	+0.6500	.5907	+1.104	+9.4305	.9836
18	Rumk. 1188	6½	+90	+41	6 23.9	+ 7 55 15	+1.0909	.5908	+1.101	+9.4192	.9845
18	71 Tauri	6	+90	+34	6 30.0	+ 8 1 8	+1.0072	.5909	+1.099	+9.4218	.9843
18	Rumk. 1198	6	+90	+45	6 48.5	+ 8 18 55	+1.1363	.5913	+1.094	+9.4191	.9845
18	75 Tauri	6	+57	- 7	7 20.9	+ 8 50 7	+0.3451	.5917	+1.084	+9.4419	.9827
18	δ ¹ Tauri	4½	+90	+16	7 24.3	+ 8 53 22	+0.7508	.5917	+1.083	+9.4314	.9836
18	δ ² Tauri	4½	+90	+23	7 26.7	+ 8 55 38	+0.8470	.5918	+1.083	+9.4289	.9838
18	Rumk. 1212	6	-12	-73	7 41.1	+ 9 9 32	-0.8209	.5919	+1.078	+9.4721	.9800
18	80 Tauri	6	+90	+46	8 3.2	+ 9 30 49	+1.1434	.5922	+1.072	+9.4226	.9842
18	B.A.C. 1391	5	+78	+ 8	8 12.7	+ 9 39 54	+0.5970	.5923	+1.069	+9.4377	.9830
18	81 Tauri	5½	+90	+43	8 15.6	+ 9 42 43	+1.1087	.5923	+1.068	+9.4212	.9841
18	85 Tauri	6	+90	+33	8 45.0	+10 11 2	+0.9965	.5926	+1.060	+9.4226	.9838
18	ε Tauri	1	+68	+ 2	10 23.5	+11 45 43	+0.4851	.5937	+1.032	+9.4466	.9823
18	α ² Tauri	5½	+90	+55	11 45.9	-10 55 1	+1.2173	.5947	+1.007	+9.4310	.9836
21	f Geminor	6	+90	+24	9 28.3	+ 7 58 40	+0.7771	.6131	-.0517	+9.4893	.9783
21	g Geminor	5½	+24	-32	12 0.1	+10 24 18	-0.2074	.6126	-.0571	+9.5088	.9761
21	3 Cancri	6	+77	+11	17 39.0	- 8 10 37	+0.5824	.6111	-.0637	+9.4821	.9790
21	B.A.C. 2683	6	-30	-71	19 9.0	- 6 44 19	-1.0520	.6105	-.0736	+9.5173	.9751
21	B.A.C. 2731	6½	+77	+10	21 12.7	- 4 45 38	+0.5844	.6100	-.0770	+9.4757	.9796
21	ζ ¹ Cancri	4½	+29	-29	22 2.7	- 3 57 40	-0.1153	.6096	-.0789	+9.4909	.9781
21	ζ ² Cancri	7½	+29	-29	22 2.8	- 3 57 34	-0.1128	.6098	-.0789	+9.4909	.9781
21	d ¹ Cancri	6	-43	-71	2 21.7	+ 0 10 54	-1.1784	.6081	-.0877	+9.5071	.9763
22	d ² Cancri	6	+35	-24	3 21.1	+ 1 7 59	-0.0066	.6077	-.0897	+9.4776	.9795
22	δ Cancri	6	-55	-72	5 34.3	+ 3 15 47	-1.2583	.6066	-.0945	+9.5023	.9769
22	54 Cancri	6½	+83	+10	13 14.7	+10 37 53	+0.6323	.6032	-.1090	+9.4360	.9832
22	α ¹ Cancri	6	+59	- 5	15 41.8	-11 0 54	+0.3700	.6020	-.1138	+9.4357	.9832
22	α ² Cancri	6	+41	-20	15 49.5	-10 53 26	+0.0984	.6017	-.1140	+9.4426	.9826
22	π ¹ Cancri	6½	+33	-29	21 43.7	- 5 13 13	-0.0501	.5987	-.1244	+9.4276	.9838
22	π ² Cancri	6	+27	-36	22 52.5	- 4 7 2	-0.1555	.5981	-.1263	+9.4265	.9839
23	7 Leonis	6½	- 7	-75	7 13.8	+ 3 54 51	-0.7499	.5935	-.1395	+9.4120	.9850
23	18 Leonis	6	+90	+44	11 33.5	+ 8 4 38	+1.1684	.5907	-.1460	+9.3324	.9897
23	γ Leonis	5	+24	-42	16 25.9	-11 13 55	-0.9129	.5879	-.1524	+9.3544	.9886
23	α Leonis	1½	+13	-55	20 40.5	- 7 8 49	-0.4112	.5855	-.1581	+9.3391	.9894
24	45 Leonis	6	+64	- 7	4 48.1	+ 0 40 46	+0.4439	.5805	-.1673	+9.2679	.9928
24	ρ Leonis	4	+70	- 3	7 0.3	+ 2 48 5	+0.5228	.5794	-.1695	+9.2389	.9934
24	49 Leonis	6	+90	+28	7 57.8	+ 3 43 33	+1.0170	.5788	-.1704	+9.2098	.9942
24	χ Leonis	5	+36	-32	20 57.3	- 7 44 55	+0.0195	.5717	-.1815	+9.1461	.9957
25	σ Leonis	4	+37	-32	4 2.8	- 0 54 27	+0.0265	.5678	-.1859	+9.0702	.9970
25	δ Virginis	6	-15	-86	21 29.3	- 7 3 53	-0.8892	.5598	-.1929	+8.8838	.9987
26	10 Virginis	6	+38	-33	1 55.9	- 3 46 21	+0.0405	.5582	-.1937	+8.6629	9.9995
26	γ Virginis, pr.	2½	+79	+ 1	16 43.8	+10 31 59	+0.6234	.5533	-.1939	-8.1032	0.0000
26	B.A.C. 4277	6	+75	- 4	17 36.1	+11 23 34	+0.5802	.5531	-.1939	-8.1706	0.0000
27	46 Virginis	6½	+88	+17	1 32.0	- 4 57 12	+0.9194	.5513	-.1924	-8.6663	9.9995
27	48 Virginis	6	+87	+17	3 5.0	- 3 27 18	+0.9275	0.5508	-.1920	-8.7119	9.9994

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF
PLANETS AND STARS BY THE MOON, FOR THE YEAR 1868.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of 6.	At Washington Mean Time of Conjunction.					
			North-ern.	South-ern.		H	Y	p'	q'	Log sin D	Log cos D
June 27	65 Virginis	6	+69	-7	12 12.6	+ 5 22 26	+0.5215	0.5494	-.1888	-8.8682	9.9988
	27 66 Virginis	6	+82	+1	12 46.8	+ 5 55 36	+0.6639	.5493	-.1886	-8.8920	.9987
	27 7 Virginis	5	+85	+35	16 17.5	+ 9 19 25	+1.1527	.5490	-.1871	-8.9894	.9979
	27 80 Virginis	6	+32	-38	17 58.4	+10 57 2	-0.0474	.5488	-.1862	-8.9157	.9985
	28 94 Virginis	6	+82	+24	8 31.9	+ 1 2 13	+1.0095	.5479	-.1773	-9.1574	.9955
	29 ε ¹ Libræ	6	+60	-10	7 19.3	- 0 54 32	+0.4577	.5485	-.1578	-9.2944	.9914
	29 ε ² Libræ	6	+19	-48	8 27.5	+ 0 11 28	-0.2338	.5487	-.1565	-9.2757	.9921
	29 18 Libræ, pr.	6½	-6	-86	9 28.8	+ 1 10 48	-0.6739	.5487	-.1554	-9.2652	.9925
	29 B.A.C. 5070	6	-34	-90	21 16.4	-11 24 35	-1.0681	.5498	-.1426	-9.3142	.9906
	30 γ Libræ	4½	+76	+10	2 43.1	- 6 8 28	+0.7930	.5504	-.1358	-9.3941	.9862
July	30 η Libræ	6	+75	+47	6 44.1	- 2 15 17	+1.2260	.5511	-.1308	-9.4200	.9844
	30 48 Libræ	4½	-37	-90	13 24.1	+ 4 11 40	-1.0708	.5518	-.1290	-9.3805	.9871
	30 49 Libræ	5½	+74	+47	14 23.9	+ 5 9 32	+1.2221	.5518	-.1206	-9.4441	.9825
	1 φ Ophiuchi	5	+16	-46	4 47.4	+ 4 55 19	-0.1737	.5539	-.1002	-9.4487	.9821
	1 24 Scorpii	5	+65	0	9 37.9	- 0 14 24	+0.6153	.5542	-.0929	-9.4777	.9795
	1 B.A.C. 5695	6	-31	-90	16 23.3	+ 6 17 39	-0.9445	.5549	-.0823	-9.4557	.9815
	1 29 Ophiuchi	6	+72	+36	19 3.3	+ 8 52 22	+1.1156	.5550	-.0783	-9.5057	.9765
	1 B.A.C. 5771	6½	-3	-67	22 3.6	+11 46 43	-0.4743	.5551	-.0735	-9.4765	.9796
	2 B.A.C. 5839	6½	-14	-86	3 28.3	- 6 59 20	-0.6515	.5555	-.0645	-9.4809	.9791
	2 B.A.C. 6060	6½	+6	-50	20 11.6	+ 9 10 49	-0.2380	.5559	-.0368	-9.5076	.9762
	3 B.A.C. 6287	6	-15	-77	12 10.1	+ 0 37 36	-0.5720	.5550	-.0095	-9.5083	.9762
	3 B.A.C. 6292	6	-5	-60	12 41.9	+ 1 8 25	-0.3781	.5550	-.0084	-9.5123	.9757
	3 B.A.C. 6293	6½	-49	-90	12 44.9	+ 1 11 17	-1.0809	.5550	-.0084	-9.4980	.9773
	3 B.A.C. 6294	6	-37	-90	12 45.6	+ 1 11 56	-0.9266	.5550	-.0084	-9.5012	.9770
	3 29 Sagittarii	6	+70	+55	21 14.6	+ 9 24 13	+1.2425	.5540	+0.0060	-9.5437	.9717
	4 B.A.C. 6536	6	+34	-19	6 1.4	- 6 6 13	+0.2854	.5527	+0.0209	-9.5233	.9744
	4 d Sagittarii	5	+21	-32	10 27.1	- 1 49 13	+0.0531	.5518	+0.0225	-9.5166	.9752
	4 e ¹ Sagittarii	4	-48	-90	12 23.4	+ 0 3 23	-1.0947	.5516	+0.0317	-9.4920	.9780
	4 e ² Sagittarii	5½	-14	-79	12 27.2	+ 0 7 0	-0.5879	.5516	+0.0318	-9.5025	.9768
	4 B.A.C. 6658	6	-3	-62	15 25.0	+ 2 58 6	-0.4063	.5508	+0.0367	-9.5042	.9766
	5 57 Sagittarii	5½	+71	+22	2 54.3	- 9 53 53	+0.9548	.5480	+0.0549	-9.5208	.9747
	5 e Capricor, pr.	5	+72	+19	20 40.1	+ 7 18 3	+0.9219	.5432	+0.0818	-9.4956	.9776
	5 B.A.C. 7097	6	+12	-48	23 57.2	+10 28 57	-0.2105	.5421	+0.0864	-9.4653	.9806
	6 B.A.C. 7145	6½	+1	-63	2 25.8	-11 7 9	-0.4201	.5415	+0.0900	-9.4556	.9815
	6 29 Capricor	6	+50	-14	19 54.0	+ 5 48 36	+0.3841	.5360	+0.1128	-9.4327	.9834
	7 B.A.C. 7487	6½	+10	-57	5 15.3	- 9 7 11	-0.3412	.5332	+0.1237	-9.3856	.9868
	7 42 Capricor	6	+76	+8	8 56.3	- 5 32 53	+0.7509	.5321	+0.1279	-9.4024	.9857
	7 44 Capricor	6	+75	+51	9 41.9	- 4 48 37	+1.2575	.5320	+0.1288	-9.4129	.9849
	7 μ Capricor	5	+76	+25	14 53.6	+ 0 13 41	+1.0181	.5304	+0.1343	-9.3887	.9866
	7 e ¹ Aquarii	6	-11	-90	23 47.1	+ 8 51 15	-0.7478	.5281	+0.1430	-9.2983	.9912
	7 e ² Aquarii	6	+35	-31	23 49.7	+ 8 53 47	+0.0832	.5281	+0.1431	-9.3252	.9901
	8 σ Aquarii	4	+76	+1	10 11.2	+ 5 3 3	+0.6595	.5256	+0.1522	-9.2939	.9914
	8 58 Aquarii	6	+79	+23	10 43.3	- 4 31 58	+0.9940	.5255	+0.1527	-9.3025	.9911
	8 64 Aquarii	6½	+75	0	14 40.9	- 0 41 21	+0.6442	.5247	+0.1559	-9.2691	.9924
	8 λ Aquarii	4	-21	-90	21 39.4	+ 6 4 54	-0.9417	.5235	+0.1611	-9.1582	.9954
	8 78 Aquarii	6	-42	-90	22 41.1	+ 7 4 48	-1.1923	.5232	+0.1618	-9.1381	.9958
	9 81 Aquarii	6	-9	-90	2 15.4	+10 32 51	-0.7605	.5229	+0.1641	-9.1306	.9960
	9 82 Aquarii	6	-42	-90	2 51.6	+11 7 59	-1.1969	.5228	+0.1646	-9.1027	.9965
	9 h ¹ Aquarii	6	+49	-21	4 13.0	-11 33 0	+0.2667	.5226	+0.1653	-9.1646	.9953
	9 h ² Aquarii	7	+54	-16	4 18.1	-11 27 59	+0.3475	.5226	+0.1656	-9.1677	.9952
	9 h ³ Aquarii	7	+73	-3	4 35.8	-11 10 51	+0.5981	.5225	+0.1656	-9.1769	.9950
	9 h ⁴ Aquarii	7½	+61	-11	5 17.6	-10 30 14	+0.4444	.5225	+0.1661	-9.1646	.9953
	9 φ Aquarii	4½	-8	-90	9 2.1	- 6 52 15	-0.7442	.5219	+0.1684	-9.0706	.9970
	9 χ Aquarii	5½	+82	+70	10 21.4	- 5 35 18	+1.3381	.5219	+0.1692	-9.1667	.9953
	9 96 Aquarii	5½	-57	-90	11 41.5	- 4 17 28	-1.3035	.5217	+0.1700	-9.0076	.9977

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1868.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Wash- ington Mean Time of δ.	At Washington Mean Time of Conjunction.					
			North- ern.	South- ern.		H	Y	p'	q'	Log sin D	Log cos D
July 10	20 Piscium	6	-50	-90	2 42.3	+10 17 12	-1.2756	0.5212	+1.1771	-8.7847	9.9992
	24 Piscium	6½	+14	-59	5 19.6	-11 10 7	-0.3790	.5212	+1.1780	-8.8308	.9990
	27 Piscium	5½	+76	-2	8 21.1	-8 13 52	+0.6017	.5214	+1.1791	-8.8735	.9988
	29 Piscium	5½	+54	-18	10 0.0	-6 37 48	+0.3199	.5214	+1.1796	-8.8166	9.9991
	10 Ceti	6	+3	-75	22 57.8	+5 57 18	-0.5856	.5231	+1.1828	-8.1330	0.0000
	11 14 Ceti	6½	+81	+7	3 36.1	+10 27 26	+0.7544	.5237	+1.1834	-8.3313	9.9999
	11 15 Ceti	6	+89	+16	4 24.6	+11 14 30	+0.9005	.5238	+1.1835	-8.3308	.9999
	11 29 Ceti	6½	+90	+28	20 18.5	+2 40 7	+1.0720	.5278	+1.1836	-8.3573	.9999
	11 33 Ceti	6	+90	+12	21 37.4	+3 56 45	+0.8375	.5284	+1.1835	-8.4837	.9998
	11 35 Ceti	6½	+90	+23	22 37.8	+4 55 19	+0.9883	.5288	+1.1834	-8.4912	.9998
12	f Piscium	6	+50	-22	1 17.9	+7 30 35	+0.2426	.5297	+1.1831	+8.7066	.9994
	B.A.C. 408	6½	+7	-68	3 46.7	+9 54 52	-0.5180	.5306	+1.1826	+8.8489	.9989
	γ Piscium	4½	+57	-15	13 9.2	-4 59 46	+0.3574	.5344	+1.1803	+8.9244	.9985
	64 Ceti	6½	+15	-56	3 49.6	+9 13 14	-0.3754	.5421	+1.1741	+9.1409	.9958
	51 Ceti	4½	+6	-68	4 36.1	+9 58 19	-0.5320	.5424	+1.1736	+9.1556	.9955
	B.A.C. 741	6½	+7	-66	10 6.8	-8 41 36	-0.5224	.5456	+1.1704	+9.1998	.9945
	B.A.C. 755	6	-46	-80	11 10.7	-7 39 46	-1.2411	.5461	+1.1698	+9.2383	.9934
	ε Ceti	4	+90	+33	11 52.5	-6 59 11	+1.0945	.5466	+1.1693	+9.1363	.9959
	B.A.C. 830	6	+23	-45	18 36.5	-0 28 21	-0.2146	.5509	+1.1644	+9.2472	.9931
	μ Ceti	4	+80	+2	19 45.0	+0 37 50	+0.6246	.5517	+1.1636	+9.2201	.9939
14	B.A.C. 987	6½	+3	-68	7 53.4	-11 38 2	-0.5798	.5601	+1.1527	+9.3369	.9895
	f Tauri	4	+90	+14	16 38.8	-3 10 44	+0.7827	.5665	+1.1431	+9.3347	.9896
	Wei.III.1085	8½	+67	-1	7 8.1	+10 47 45	+0.4746	.5773	+1.1245	+9.4033	.9856
	Wei.III.1127	8	+90	+53	8 4.1	+11 41 45	+1.2277	.5780	+1.1231	+9.3848	.9868
	Wei.IV.24	9	+76	+5	9 53.2	-10 33 5	+0.5770	.5794	+1.1204	+9.4098	.9852
	Lal. 7753	7½	+27	-35	9 58.1	-10 28 20	+0.1399	.5795	+1.1203	+9.4296	.9837
	B.A.C. 1281	7	-14	-74	10 0.8	-10 25 44	-0.8517	.5795	+1.1202	+9.4482	.9822
	Rumk. 1103	7	+47	-16	10 4.9	-10 21 51	+0.1994	.5796	+1.1201	+9.4209	.9844
	Rumk. 1108	9	+90	+29	10 32.0	-9 55 43	+0.9583	.5800	+1.1194	+9.4013	.9858
	Rumk. 1123	8½	+90	+39	11 21.0	-9 8 28	+1.0914	.5807	+1.1181	+9.4002	.9858
15	48 Tauri	6	+84	+9	12 1.7	-8 29 19	+0.6491	.5813	+1.1170	+9.4149	.9848
	Rumk. 1136	6	+27	-34	12 27.5	-8 4 25	-0.1360	.5817	+1.1163	+9.4372	.9831
	γ Tauri	4	+79	+7	13 43.1	-6 51 35	+0.6005	.5826	+1.1146	+9.4215	.9843
	55 Tauri	7	+18	-44	13 45.1	-6 49 42	-0.3104	.5826	+1.1146	+9.4456	.9824
	58 Tauri	6	+90	+49	14 4.3	-6 31 12	+1.1820	.5828	+1.1141	+9.4066	.9854
	Rumk. 1163	8	+6	-59	14 26.0	-6 10 18	-0.5261	.5830	+1.1135	+9.4530	.9818
	δ Tauri	4	-47	-73	14 59.8	-5 37 43	-1.2167	.5833	+1.1125	+9.4716	.9801
	63 Tauri	6	+12	-51	15 13.0	-5 25 3	-0.4145	.5834	+1.1122	+9.4525	.9818
	B.A.C. 1351	6½	+21	-41	15 14.5	-5 23 37	-0.2605	.5835	+1.1122	+9.4486	.9821
	δ Tauri	6	-30	-73	15 29.2	-5 9 29	-1.0651	.5836	+1.1117	+9.4692	.9803
15	Lal. 8249	7½	-3	-71	15 36.3	-5 2 38	-0.6817	.5837	+1.1115	+9.4602	.9811
	Lal. 8256	8	+9	-55	15 38.8	-5 0 9	-0.4790	.5837	+1.1115	+9.4553	.9816
	70 Tauri	7	+72	+4	16 9.4	-4 30 41	+0.5375	.5840	+1.1106	+9.4306	.9836
	Lal. 8311	8	+90	+31	16 21.5	-4 19 2	+0.9806	.5841	+1.1103	+9.4192	.9845
	Rumk. 1188	6½	+90	+32	16 21.7	-4 18 51	+0.9820	.5841	+1.1103	+9.4192	.9845
	Rumk. 1189	15	+15	-47	16 27.8	-4 13 1	-0.3612	.5841	+1.1101	+9.4546	.9816
	71 Tauri	6	+90	+26	16 27.9	-4 12 53	+0.8976	.5841	+1.1101	+9.4218	.9843
	Rumk. 1192	15	-2	-70	16 30.7	-4 10 13	-0.6622	.5842	+1.1100	+9.4622	.9809
	Rumk. 1198	6	+90	+35	16 46.8	-3 54 44	+1.0233	.5844	+1.1097	+9.4192	.9845
	Rumk. 1200	15	+90	+31	16 59.2	-3 42 46	+0.9799	.5847	+1.1093	+9.4211	.9843
15	Rumk. 1203	15	+53	-10	17 17.3	-3 25 20	+0.2860	.5850	+1.1090	+9.4404	.9828
	75 Tauri	6	+49	-13	17 19.8	-3 22 54	+0.2318	.5851	+1.1088	+9.4419	.9827
	δ Tauri	4½	+84	+10	17 23.3	-3 19 36	+0.6414	.5851	+1.1086	+9.4314	.9836
	δ Tauri	4½	+90	+16	17 25.7	-3 17 18	+0.7326	.5852	+1.1086	+9.4289	.9837
	Rumk. 1210	15	+65	0	17 33.4	-3 9 52	+0.4575	.5853	+1.1085	+9.4363	.9831

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF
PLANETS AND STARS BY THE MOON, FOR THE YEAR 1868.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of 6.	At Washington Mean Time of Conjunction.					
			North- ern.	South- ern.		H	Y	p'	q'	Log sin D	Log cos D
					h m	h m s					
July 15	Rumk. 1212	6	-20	-73	17 40.4	- 3 3 5	-0.9412	.5854	+1.083	+9.4721	9.9800
15	Rumk. 1214		-54	-73	17 44.0	- 2 59 36	-1.2583	.5855	+1.082	+9.4798	.9792
15	B.A.C. 1215	7	-64	-73	17 44.6	- 2 59 5	-1.2685	.5855	+1.082	+9.4805	.9792
15	80 Tauri	6	+90	+36	18 3.0	- 2 41 24	+1.0378	.5855	+1.075	+9.4226	.9842
15	B.A.C. 1391	5	+68	+1	18 12.6	- 2 32 7	+0.4876	.5857	+1.072	+9.4377	.9830
15	81 Tauri	5½	+90	+34	18 15.6	- 2 29 13	+1.0035	.5857	+1.068	+9.4242	.9841
15	B.A.C. 1134	7	+72	+4	18 18.2	- 2 26 40	+0.5380	.5857	+1.067	+9.4367	.9831
15	Rumk. 1227	7	+90	+27	18 33.2	- 2 12 18	+0.9068	.5861	+1.064	+9.4276	.9838
15	85 Tauri	6	+90	+26	18 45.6	- 2 0 22	+0.8908	.5863	+1.061	+9.4286	.9838
15	Rumk. 1232		+44	-17	18 57.5	- 1 48 52	+0.1502	.5863	+1.060	+9.4485	.9821
15	Rumk. 1233		-36	-73	19 3.5	- 1 43 9	-1.1238	.5863	+1.058	+9.4800	.9792
15	Rumk. 1235		+90	+18	19 9.4	- 1 37 26	+0.7725	.5864	+1.057	+9.4329	.9834
15	B.A.C. 1406		+68	+1	19 29.4	- 1 18 9	+0.4823	.5867	+1.051	+9.4414	.9827
15	Rumk. 1238	10	+56	-7	19 49.8	- 0 58 33	+0.3261	.5870	+1.046	+9.4464	.9823
15	Lal. 8599	9	-20	-73	19 53.8	- 0 54 43	-0.9292	.5872	+1.042	+9.4775	.9795
15	Lal. 8610	8	+27	-34	20 1.9	- 0 46 56	-0.1525	.5872	+1.042	+9.4590	.9812
15	Lal. 8613	8	+15	-46	20 3.1	- 0 45 43	-0.3558	.5871	+1.042	+9.4640	.9808
15	α Tauri	1	+59	-4	20 25.8	- 0 23 53	+0.3784	.5874	+1.035	+9.4466	.9823
15	89 Tauri	7	+90	+31	21 21.9	+ 0 30 7	+0.9563	.5880	+1.019	+9.4341	.9833
15	α' Tauri	5½	+90	+57	21 47.1	+ 0 54 19	+1.2320	.5883	+1.012	+9.4278	.9838
15	α'' Tauri	5½	+90	+44	21 49.7	+ 0 56 53	+1.1176	.5883	+1.012	+9.4310	.9836
15	Rumk. 1241		+72	+4	22 4.4	+ 1 11 0	+0.5275	.5885	+1.007	+9.4471	.9823
15	Rumk. 1243	8	+74	+6	22 17.2	+ 1 23 17	+0.5544	.5886	+1.004	+9.4469	.9823
15	Rumk. 1246	7	+18	-43	22 44.1	+ 1 49 11	-0.3143	.5890	+0.996	+9.4697	.9802
15	Rumk. 1247		+61	-3	22 44.4	+ 1 49 29	+0.4019	.5890	+0.996	+9.4520	.9819
15	Rumk. 1254		+65	0	23 0.1	+ 2 4 35	+0.4507	.5891	+0.991	+9.4514	.9819
15	Rumk. 1255		+90	+50	23 1.2	+ 2 5 41	+1.1735	.5892	+0.991	+9.4327	.9835
15	Lal. 8852	9½	+26	-33	23 19.4	+ 2 23 10	-0.1598	.5894	+0.996	+9.4674	.9805
15	Rumk. 1263	9½	+90	+49	23 56.9	+ 2 59 15	+1.1679	.5898	+0.975	+9.4352	.9832
16	Rumk. 1276		-45	-72	0 59.9	+ 3 59 52	-1.2001	.5901	+0.957	+9.4957	.9776
16	Rumk. 1283		+90	+17	1 40.3	+ 4 38 44	+0.7332	.5910	+0.944	+9.4508	.9820
16	Rumk. 1294		+90	+59	2 32.9	+ 5 29 20	+1.2405	.5917	+0.927	+9.4398	.9829
16	Rumk. 1299	7½	+23	-37	2 56.9	+ 5 52 25	-0.2232	.5918	+0.922	+9.4772	.9795
16	Rumk. 1300		+26	-33	2 59.2	+ 5 54 38	-0.1663	.5920	+0.921	+9.4760	.9796
16	B.A.C. 1526	6	+70	+4	5 12.4	+ 8 2 43	+0.5056	.5935	+0.889	+9.4645	.9807
16	π Tauri	5½	-4	-70	9 12.5	+11 53 33	-0.8915	.5963	+0.806	+9.5006	.9770
16	111 Tauri	6	+90	+39	16 1.4	- 5 33 24	+1.0240	.6006	+0.671	+9.4723	.9800
16	115 Tauri	5½	+70	+7	17 6.7	- 4 30 42	+0.5065	.6013	+0.650	+9.4863	.9786
16	117 Tauri	6	+90	+64	17 28.0	- 4 10 13	+1.2503	.6017	+0.639	+9.4690	.9803
16	119 Tauri	5½	+34	-22	19 5.4	- 2 36 43	-0.0181	.6026	+0.609	+9.5013	.9770
16	120 Tauri	6	+39	-17	19 36.5	- 2 6 48	+0.0630	.6031	+0.595	+9.5001	.9771
17	130 Tauri	6	+90	+50	1 4.4	+ 3 8 3	+1.1225	.6059	+0.462	+9.4823	.9790
17	χ² Orionis	6	-11	-71	3 57.0	+ 5 53 42	-0.7881	.6074	+0.419	+9.5282	.9737
17	χ³ Orionis	5	-1	-61	7 14.7	+ 9 3 29	-0.6289	.6090	+0.348	+9.5275	.9738
17	χ⁴ Orionis	5	-32	-70	7 24.8	+ 9 13 11	-1.0703	.6094	+0.340	+9.5369	.9726
17	68 Orionis	6	-2	-63	10 32.6	-11 46 38	-0.6528	.6108	+0.270	+9.5302	.9735
17	71 Orionis	5½	+35	-18	11 38.9	-10 43 4	-0.0087	.6111	+0.246	+9.5169	.9752
17	γ Geminor	4½	-26	-70	17 1.2	- 5 33 54	-0.9940	.6129	+0.125	+9.5400	.9722
20	7 Leonis	6½	-1	-71	16 31.6	- 8 59 19	-0.6459	.6028	-1.406	+9.4120	.9850
21	ν Leonis	5	+30	-35	1 27.2	- 0 24 45	-0.1024	.5977	-1.542	+9.3544	.9836
21	α Leonis	1½	+19	-47	5 33.8	+ 3 32 21	-0.2923	.5955	-1.506	+9.3391	.9894
21	45 Leonis	6	+73	-1	13 25.8	+11 6 16	+0.5608	.5910	-1.692	+9.2579	.9927
21	ε Leonis	4	+82	+4	15 33.6	-10 50 47	+0.6421	.5897	-1.715	+9.3390	.9934
21	49 Leonis	6	+90	+37	16 29.2	- 9 57 12	+1.1290	.5892	-1.725	+9.2098	.9942
22	ζ Leonis	5	+45	-24	5 2.9	+ 2 8 23	+0.1608	.5820	-1.838	+9.1461	.9957

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1868.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of δ .	At Washington Mean Time of Conjunction.								
			North-ern.	South-ern.		H	Y	p'	q'	Log sin D	Log cos D			
					h m s	h m s								
July 22	α Leonis	4	+45	-24	11 54.2	+ 8 44 43	+0.1745	0.5780	-.1885	+9.0702	9.9970			
23	δ Virginis	6	-5	-86	4 47.1	+ 1 1 30	-0.7142	.5692	-.1956	+8.8838	.9987			
23	10 Virginis	6	+47	-24	9 5.4	+ 5 10 49	+0.2045	.5674	-.1964	+8.6630	9.9995			
23	γ Virginis, pr.	2½	+90	+ 8	23 27.8	- 4 56 30	+0.7858	.5612	-.1965	-8.1030	0.0000			
24	B.A.C. 4277	6	+84	+ 6	0 18.7	- 4 7 19	+0.7440	.5610	-.1964	-8.1706	0.0000			
24	46 Virginis	6½	+88	+29	8 2.2	+ 3 20 31	+1.0814	.5583	-.1948	-8.6663	9.9995			
24	43 Virginis	6	+87	+29	9 32.9	+ 4 48 11	+1.0804	.5578	-.1943	-8.7119	.9904			
24	65 Virginis	6	+85	+ 3	18 28.0	-10 34 41	+0.6891	.5554	-.1908	-8.8681	.9988			
24	66 Virginis	6	+86	+11	19 1.5	-10 2 18	+0.8298	.5553	-.1908	-8.8921	.9987			
24	β Virginis	5	+85	+56	22 27.8	- 6 42 52	+1.3134	.5544	-.1890	-8.9674	.9979			
25	80 Virginis	6	+42	-28	0 6.6	- 5 7 16	+0.1261	.5540	-.1882	-8.9158	.9985			
25	94 Virginis	6	+82	+37	14 24.9	+ 8 42 39	+1.1703	.5513	-.1788	-9.1574	.9955			
26	ξ^1 Libræ	6	+72	- 1	12 57.0	+ 6 30 33	+0.6139	.5497	-.1587	-9.2943	.9914			
26	ξ^2 Libræ	6	+27	-40	14 4.7	+ 7 36 2	-0.0742	.5497	-.1574	-9.2757	.9921			
26	18 Libræ, pr.	6½	+ 3	-69	15 5.6	+ 8 34 58	-0.5126	.5497	-.1563	-9.2652	.9925			
27	B.A.C. 5070	6	-22	-90	2 49.5	- 4 4 2	-0.9145	.5498	-.1432	-9.3142	.9906			
27	γ Libræ	4½	+76	+19	8 15.4	+ 1 11 14	+0.9354	.5499	-.1367	-9.3941	.9862			
27	48 Libræ	4½	-26	-90	18 56.1	+11 31 2	-0.9328	.5504	-.1227	-9.3805	.9871			
28	η Ophiuchi	5	+22	-38	10 21.6	+ 2 26 15	-0.0525	.5513	-.1010	-9.4487	.9821			
28	24 Scorpæ	5	+73	+ 6	15 13.3	+ 7 8 25	+0.7310	.5517	-.0937	-9.4777	.9795			
28	B.A.C. 5695	6	-24	-90	22 0.8	-10 17 31	-0.8356	.5519	-.0832	-9.4557	.9815			
29	29 Ophiuchi	6	+72	+49	0 41.7	- 7 41 52	+1.2215	.5523	-.0789	-9.5057	.9765			
29	B.A.C. 5771	6½	+ 2	-59	3 43.1	- 4 46 27	-0.3719	.5525	-.0741	-9.4765	.9796			
29	B.A.C. 5839	6½	- 9	-75	9 9.8	+ 0 29 35	-0.5551	.5526	-.0656	-9.4809	.9791			
30	B.A.C. 6060	6½	+10	-45	2 0.1	- 7 13 17	-0.1604	.5530	-.0377	-9.5076	.9762			
30	B.A.C. 6287	6	-12	-71	18 5.4	+ 8 20 19	-0.5137	.5525	-.0106	-9.5083	.9762			
30	B.A.C. 6292	6	- 1	-55	18 37.5	+ 8 51 22	-0.3169	.5522	-.0095	-9.5123	.9757			
30	B.A.C. 6293	6½	-44	-90	18 40.5	+ 8 54 16	-1.0240	.5522	-.0094	-9.4980	.9773			
30	B.A.C. 6294	6	-33	-90	18 41.1	+ 8 54 55	-0.8694	.5522	-.0094	-9.5012	.9770			
31	B.A.C. 6536	6	+36	-17	12 3.5	+ 1 43 18	+0.3243	.5507	+0.0196	-9.5233	.9744			
31	δ Sagittarii	5	+23	-30	16 30.6	+ 6 1 44	+0.0864	.5500	+0.0272	-9.5166	.9752			
31	ϵ^1 Sagittarii	4	-46	-90	18 27.5	+ 7 54 55	-1.0654	.5497	+0.0304	-9.4920	.9780			
31	ϵ^2 Sagittarii	5½	-12	-76	18 31.3	+ 7 58 35	-0.5578	.5497	+0.0305	-9.5025	.9768			
31	B.A.C. 6658	6	- 2	-60	21 30.0	+10 51 19	-0.3795	.5493	+0.0354	-9.5042	.9766			
Aug. 1	57 Sagittarii	5½	+71	+24	9 2.2	- 1 58 34	+0.9703	.5473	+0.0536	-9.5208	.9747			
2	ϵ Capricor, pr.	5	+72	+19	2 50.5	- 8 44 8	+0.9171	.5431	+0.0806	-9.4956	.9776			
2	B.A.C. 7043	6½	+55	- 7	2 54.4	- 8 40 18	+0.5007	.5431	+0.0807	-9.4868	.9785			
2	B.A.C. 7097	6	+12	-49	6 7.8	- 5 33 0	-0.2202	.5424	+0.0853	-9.4653	.9806			
2	B.A.C. 7145	6½	+ 1	-64	8 36.5	- 3 8 58	-0.4328	.5416	+0.0889	-9.4556	.9815			
3	29 Capricor	6	+48	-16	2 4.6	-10 13 19	+0.3537	.5370	+0.1119	-9.4331	.9834			
3	B.A.C. 7487	6½	+ 7	-59	11 25.3	- 1 9 45	-0.3816	.5344	+0.1233	-9.3856	.9868			
3	42 Capricor	6	+75	+ 5	15 5.9	+ 2 24 10	+0.7079	.5335	+0.1272	-9.4023	.9857			
3	44 Capricor	6	+75	+45	15 51.5	+ 3 8 22	+1.2142	.5333	+0.1282	-9.4129	.9849			
3	μ Capricor	5	+76	+22	21 2.6	+ 8 10 8	+0.9698	.5321	+0.1337	-9.3887	.9866			
4	ϵ Aquarii	6	-15	-90	5 55.0	- 7 13 23	-0.8063	.5299	+0.1426	-9.2983	.9912			
4	ϵ^2 Aquarii	6	+32	-34	5 57.6	- 7 10 51	+0.0258	.5297	+0.1427	-9.3252	.9901			
4	σ Aquarii	4	+70	- 3	16 17.9	+ 2 51 3	+0.5940	.5272	+0.1518	-9.2939	.9914			
4	58 Aquarii	6	+79	+18	16 49.9	+ 3 22 8	+0.9283	.5271	+0.1524	-9.3024	.9911			
4	64 Aquarii	6½	+69	- 4	20 47.0	+ 7 12 15	+0.5750	.5264	+0.1556	-9.2690	.9924			
5	1 Aquarii	4	-27	-90	3 45.0	-10 2 3	-1.0193	.5250	+0.1609	-9.1582	.9954			
5	78 Aquarii	6	-53	-90	4 46.6	- 9 2 12	-1.2712	.5249	+0.1616	-9.1381	.9959			
5	81 Aquarii	6	-14	-90	8 20.7	- 5 34 22	-0.8408	.5243	+0.1639	-9.1306	.9960			
5	λ^1 Aquarii	6	+44	-25	10 18.2	- 3 40 17	+0.1872	.5241	+0.1652	-9.1646	.9953			
5	λ^2 Aquarii	7	+49	-21	10 23.4	- 3 25 17	+0.2680	.5240	+0.1654	-9.1677	.9952			
5	λ^3 Aquarii	7	+68	- 6	10 41.0	- 3 18 10	+0.5190	0.5240	+0.1655	-9.1769	9.9950			

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1868.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of δ .	At Washington Mean Time of Conjunction.							
			North-ern.	South-ern.		H	Y	p'	q'	Log $\sin D$	Log $\cos D$		
Aug. 12	Rumk. 1903		+48	-14	2 0.6	+ 7	5	48	+0.2113	0.5751	+0.1074	+9.4404	9.9828
12	75 Tauri	6	+45	-17	2 3.2	+ 7	8	21	+0.1565	.5751	+0.1073	+9.4420	.9827
12	δ^1 Tauri	4 $\frac{1}{2}$	+76	+ 6	2 6.7	+ 7	11	44	+0.5709	.5751	+0.1073	+9.4314	.9835
12	δ^2 Tauri	4 $\frac{1}{2}$	+88	+11	2 9.2	+ 7	14	7	+0.6694	.5752	+0.1072	+9.4289	.9837
12	Rumk. 1210		+60	- 5	2 17.2	+ 7	21	48	+0.3843	.5752	+0.1070	+9.4368	.9831
12	Rumk. 1212	6	-28	-73	2 24.4	+ 7	28	46	-1.0344	.5753	+0.1068	+9.4721	.9800
12	80 Tauri	6	+90	+31	2 47.7	+ 7	51	15	+0.9739	.5756	+0.1062	+9.4227	.9842
12	B.A.C. 1391	5	+62	- 3	2 57.7	+ 8	0	51	+0.4160	.5758	+0.1059	+9.4378	.9830
12	81 Tauri	5 $\frac{1}{2}$	+90	+29	3 0.7	+ 8	3	47	+0.9393	.5759	+0.1058	+9.4242	.9841
12	B.A.C. 1394	7	+66	0	3 3.5	+ 8	6	28	+0.4672	.5759	+0.1057	+9.4367	.9831
12	Rumk. 1227	7	+90	+22	3 18.9	+ 8	21	17	+0.8412	.5760	+0.1053	+9.4276	.9839
12	85 Tauri	6	+90	+21	3 31.7	+ 8	33	35	+0.8249	.5761	+0.1050	+9.4287	.9838
12	Rumk. 1232		+40	-21	3 44.0	+ 8	45	31	+0.0740	.5763	+0.1047	+9.4485	.9821
12	Rumk. 1233		-47	-73	3 50.2	+ 8	51	25	-1.2181	.5763	+0.1045	+9.4800	.9792
12	Rumk. 1235		+90	+14	3 56.3	+ 8	57	20	+0.7055	.5764	+0.1042	+9.4329	.9834
12	B.A.C. 1406	7	+62	- 3	4 17.0	+ 9	17	16	+0.4112	.5766	+0.1038	+9.4415	.9827
12	Rumk. 1238	10	+51	-11	4 38.0	+ 9	37	31	+0.2529	.5768	+0.1032	+9.4464	.9823
12	Lal. 8599	9	-27	-73	4 42.1	+ 9	41	29	-1.0202	.5768	+0.1032	+9.4775	.9795
12	Lal. 8610	8	+22	-38	4 50.4	+ 9	49	31	-0.2323	.5769	+0.1029	+9.4590	.9812
12	Lal. 8613	8	+11	-52	4 51.8	+ 9	50	49	-0.4385	.5769	+0.1029	+9.4641	.9808
12	α Tauri	1	+54	- 8	5 15.2	+10	13	21	+0.3065	.5773	+0.1023	+9.4466	.9823
12	89 Tauri	7	+90	+26	6 13.1	+11	9	9	+0.8933	.5780	+0.1006	+9.4341	.9833
12	σ^1 Tauri	5 $\frac{1}{2}$	+90	+49	6 39.0	+11	34	9	+1.1733	.5782	+0.1000	+9.4279	.9838
12	σ^2 Tauri	5 $\frac{1}{2}$	+90	+38	6 41.7	+11	36	48	+1.0573	.5782	+0.0999	+9.4310	.9836
12	Rumk. 1241		+66	0	6 56.9	+11	51	25	+0.4586	.5784	+0.0995	+9.4471	.9823
12	Rumk. 1243	8	+68	+ 2	7 10.1	-11	55	54	+0.4862	.5786	+0.0991	+9.4470	.9823
12	Rumk. 1246	7	+13	-48	7 37.8	-11	29	9	-0.3947	.5790	+0.0984	+9.4697	.9802
12	Rumk. 1247		+56	- 7	7 38.2	-11	28	49	+0.3317	.5790	+0.0984	+9.4520	.9818
12	Rumk. 1254		+60	- 4	7 54.3	-11	13	14	+0.3814	.5792	+0.0979	+9.4514	.9819
12	Rumk. 1255		+90	+44	7 55.5	-11	12	5	+1.1151	.5792	+0.0979	+9.4327	.9835
12	Lal. 8852	9 $\frac{1}{2}$	+22	-38	8 14.3	-10	54	0	-0.2376	.5795	+0.0974	+9.4674	.9805
12	Rumk. 1263	9 $\frac{1}{2}$	+90	+43	8 53.0	-10	16	44	+1.1097	.5799	+0.0963	+9.4353	.9832
12	Rumk. 1283	7	+88	+13	10 39.7	- 8	33	57	+0.6697	.5812	+0.0934	+9.4508	.9820
12	Rumk. 1294		+90	+52	11 34.0	- 7	41	39	+1.1847	.5818	+0.0917	+9.4398	.9829
12	B.A.C. 1526	6	+64	+ 1	14 18.5	- 5	3	12	+0.4409	.5833	+0.0873	+9.4645	.9807
12	π Tauri	5 $\frac{1}{2}$	- 9	-72	18 26.2	- 1	4	46	-0.7697	.5864	+0.0795	+9.5007	.9770
13	111 Tauri	6	+90	+35	1 27.7	+ 5	40	54	+0.9732	.5911	+0.0664	+9.4723	.9800
13	115 Tauri	5 $\frac{1}{2}$	+65	+ 3	2 35.0	+ 6	45	34	+0.4497	.5918	+0.0643	+9.4863	.9786
13	117 Tauri	6	+90	+57	2 57.0	+ 7	6	43	+1.2034	.5918	+0.0637	+9.4690	.9803
13	119 Tauri	5 $\frac{1}{2}$	+31	-25	4 37.2	+ 8	43	8	-0.0805	.5931	+0.0603	+9.5013	.9770
13	120 Tauri	6	+38	-18	5 57.9	+10	0	44	+0.0495	.5937	+0.0578	+9.5002	.9771
13	130 Tauri	6	+90	+45	10 46.7	- 9	21	35	+1.0787	.5965	+0.0480	+9.4823	.9790
13	χ^2 Orionis	6	-15	-71	13 44.2	- 6	31	3	-0.8529	.5983	+0.0418	+9.5282	.9739
13	χ^3 Orionis	5	- 4	-67	17 7.4	- 3	15	51	-0.6891	.6001	+0.0349	+9.5275	.9738
13	χ^4 Orionis	5	-39	-70	17 17.7	- 3	5	53	-1.1355	.6001	+0.0346	+9.5369	.9726
13	68 Orionis	6	- 6	-69	20 30.5	- 0	0	42	-0.7109	.6019	+0.0275	+9.4302	.9735
13	71 Orionis	5 $\frac{1}{2}$	+32	-21	21 38.5	+ 1	4	36	-0.0585	.6026	+0.0249	+9.5169	.9751
14	γ Geminor	4 $\frac{1}{2}$	-31	-70	3 8.9	+ 6	21	53	-1.0503	.6048	+0.0131	+9.5401	.9722
15	B.A.C. 2432	6 $\frac{1}{2}$	+69	+ 9	0 6.7	+ 2	28	50	+0.4891	.6115	-0.0345	+9.5020	.9769
15	f Geminor	6	+90	+24	6 23.9	+ 8	30	36	+0.7700	.6125	-0.0492	+9.4893	.9783
15	g Geminor	5 $\frac{1}{2}$	+24	-32	8 55.6	+10	56	9	-0.2074	.6126	-0.0546	+9.5088	.9761
15	3 Cancri	6	+79	+11	14 33.1	- 7	40	10	+0.5944	.6128	-0.0675	+9.4821	.9790
15	B.A.C. 2683	6	-28	-71	16 2.5	- 6	14	30	-1.0301	.6128	-0.0705	+9.5173	.9751
15	B.A.C. 2731	6 $\frac{1}{2}$	+80	+11	18 5.1	- 4	16	55	+0.6044	.6128	-0.0750	+9.4757	.9797
15	ζ^1 Cancri	4 $\frac{1}{2}$	+30	-27	18 54.5	- 3	29	29	-0.0899	0.6126	-0.0769	+9.4910	.9781

**ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF
PLANETS AND STARS BY THE MOON, FOR THE YEAR 1868.**

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of δ .	At Washington Mean Time of Conjunction.					
			North- ern.	South- ern.		H	Y	p'	q'	Log sin D	Log cos D
Aug. 15	ζ^2 Cancri	7½	+30	-27	h m	h m s	-0.0873	0.6126	-0.0769	+9.4909	9.9781
18	σ Leonis	4	+47	-23	21 55.2	-3 26 12	+0.2044	.5864	-1.908	+9.0703	.9970
19	b Virginis	6	-1	-32	14 23.5	-11 37 4	-0.6663	.5788	-1.984	+8.8839	.9987
19	10 Virginis	6	+50	-22	18 31.2	-7 35 23	+0.2419	.5764	-1.994	+8.6630	9.9995
20	γ Virginis, pr.	2½	+90	+10	8 27.1	+5 50 44	+0.8185	.5711	-1.998	-8.1027	0.0000
20	B.A.C. 4277	6	+90	+8	9 16.4	+6 38 17	+0.7775	.5711	-1.994	-8.1704	0.0000
20	46 Virginis	6½	+88	+31	16 45.2	-10 8 35	+1.1112	.5681	-1.981	-8.6662	9.9995
20	48 Virginis	6	+87	+32	18 13.1	-8 43 49	+1.1192	.5678	-1.977	-8.7118	.9994
21	65 Virginis	6	+85	+5	2 51.1	-0 23 42	+0.7261	.5649	-1.941	-8.8681	.9988
21	66 Virginis	6	+86	+14	3 23.6	+0 7 39	+0.8650	.5648	-1.939	-8.8920	.9987
21	β^2 Virginis	5	+85	+67	6 43.4	+3 20 33	+1.3418	.5639	-1.920	-8.9873	.9979
21	80 Virginis	6	+45	-26	8 19.2	+4 53 3	+0.1718	.5634	-1.919	-8.9156	.9985
21	94 Virginis	6	+82	+41	22 11.3	-5 43 14	+1.2023	.5604	-1.893	-9.1574	.9955
22	δ^1 Libræ	6	+75	0	20 6.2	-8 32 35	+0.6531	.5568	-1.609	-9.2943	.9914
22	ϵ^2 Libræ	6	+30	-37	21 12.2	-7 28 49	-0.0263	.5567	-1.597	-9.2757	.9921
22	18 Libræ, pr.	6½	+6	-65	22 11.6	-6 31 25	-0.4593	.5567	-1.586	-9.2652	.9925
23	B.A.C. 5070	6	-19	-90	9 39.4	+4 33 22	-0.8590	.5555	-1.448	-9.3141	.9906
23	γ Libræ	4½	+76	+22	14 58.5	+9 41 49	+0.9694	.5553	-1.381	-9.3941	.9862
24	48 Libræ	4½	-22	-90	1 27.3	-4 10 17	-0.8817	.5546	-1.237	-9.3805	.9871
24	ϕ Ophiuchi	5	+25	-36	16 39.1	+10 31 14	-0.0135	.5540	-1.015	-9.4487	.9821
24	24 Scorpii	5	+73	+9	21 27.3	-8 50 7	+0.7633	.5540	-0.940	-9.4777	.9795
25	B.A.C. 5695	6	-21	-90	4 10.6	-2 20 14	-0.7943	.5539	-0.838	-9.4556	.9815
25	29 Ophiuchi	6	+72	+54	6 50.1	+0 13 58	+1.2494	.5536	-0.794	-9.5057	.9765
25	B.A.C. 5771	6½	+4	-56	9 50.0	+3 7 54	-0.3352	.5535	-0.746	-9.4765	.9796
25	B.A.C. 5839	6½	-7	-71	15 14.3	+8 21 34	-0.5189	.5533	-0.659	-9.4809	.9791
26	B.A.C. 6060	6½	+12	-43	8 0.1	+0 34 5	-0.1311	.5525	-0.379	-9.5076	.9763
27	B.A.C. 6287	6	-11	-69	0 3.9	-7 53 40	-0.4876	.5512	-0.108	-9.5083	.9762
27	B.A.C. 6292	6	0	-54	0 36.0	-7 22 38	-0.2946	.5511	-0.097	-9.5123	.9757
27	B.A.C. 6293	6½	-42	-90	0 39.0	-7 19 45	-0.0970	.5511	-0.097	-9.4980	.9773
27	B.A.C. 6294	6	-32	-90	0 39.7	-7 19 4	-0.8429	.5511	-0.096	-9.5012	.9770
27	B.A.C. 6536	6	+38	-16	18 3.1	+9 30 20	+0.3445	.5489	+0.093	-9.5233	.9744
27	d Sagittarii	5	+24	-29	22 30.7	-10 10 42	+0.1060	.5484	+0.069	-9.5166	.9752
28	e^1 Sagittarii	4	-44	-90	0 27.9	-8 17 15	-1.0447	.5479	+0.0301	-9.4921	.9780
28	e^2 Sagittarii	5½	-11	-73	0 31.7	-8 13 36	-0.5380	.5479	+0.0302	-9.5025	.9768
28	B.A.C. 6658	6	-1	-58	3 30.8	-5 20 17	-0.3605	.5474	+0.0351	-9.5042	.9766
28	57 Sagittarii	5½	+71	+25	15 4.7	+5 51 22	+0.9890	.5454	+0.0533	-9.5908	.9747
29	q Capricor, pr.	5	+72	+20	8 55.7	-0 51 27	+0.9305	.5419	+0.0803	-9.4956	.9776
29	B.A.C. 7043	6½	+56	-6	8 50.7	-0 47 37	+0.5140	.5419	+0.0803	-9.4868	.9785
29	B.A.C. 7097	6	+12	-48	12 13.4	+2 20 6	-0.2070	.5411	+0.0849	-9.4653	.9807
29	B.A.C. 7145	6½	+1	-63	14 42.4	+4 44 24	-0.4199	.5405	+0.0886	-9.4556	.9815
30	29 Capricor	6	+48	-15	8 11.8	-2 18 42	+0.3647	.5368	+0.1117	-9.4327	.9835
30	B.A.C. 7487	6½	+8	-59	17 32.5	+6 44 56	-0.3709	.5343	+0.1230	-9.3856	.9868
30	42 Capricor	6	+76	+5	21 13.0	+10 18 44	+0.7178	.5336	+0.1272	-9.4023	.9857
30	44 Capricor	6	+75	+46	21 58.5	+11 2 55	+1.2238	.5333	+0.1281	-9.4129	.9850
31	μ Capricor	5	+76	+23	3 9.3	-7 55 42	+0.9790	.5322	+0.1337	-9.3887	.9866
31	e^2 Aquarii	6	-14	-90	12 0.8	+0 39 51	-0.7954	.5305	+0.1428	-9.2983	.9912
31	e^1 Aquarii	6	+32	-33	12 3.4	+0 42 21	+0.0359	.5305	+0.1429	-9.3252	.9901
31	σ Aquarii	4	+71	-2	22 22.0	+10 42 36	+0.6041	.5286	+0.1524	-9.2939	.9914
31	58 Aquarii	6	+79	+19	22 53.9	+11 13 34	+0.9380	.5284	+0.1527	-9.3024	.9911
Sept. 1	64 Aquarii	6½	+70	-3	2 50.2	-8 57 7	+0.5852	.5278	+0.1561	-9.2690	.9924
1	λ Aquarii	4	-26	-90	9 46.6	-2 13 1	-1.0069	.5266	+0.1615	-9.1582	.9954
1	78 Aquarii	6	-50	-90	10 48.0	-1 13 27	-1.2686	.5266	+0.1622	-9.1381	.9958
1	81 Aquarii	6	-14	-90	14 21.1	+2 13 27	-0.8265	.5263	+0.1645	-9.1305	.9960
1	λ^1 Aquarii	6	+45	-24	16 18.1	+4 6 59	+0.1989	.5260	+0.1660	-9.1646	.9953
1	λ^2 Aquarii	7	+50	-20	16 23.2	+4 11 58	+0.2796	0.5260	+0.1661	-9.1676	9.9952

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF
PLANETS AND STARS BY THE MOON, FOR THE YEAR 1868.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of δ .	At Washington Mean Time of Conjunction.					
			North-ern.	South-ern.		H	Y	p'	q'	Log sin D	Log cos D
Sept. 1	λ^3 Aquarii	7	+67	-6	h m	h m s	+0.5305	0.5260	+1.663	-9.1769	9.9950
	λ^4 Aquarii	7 $\frac{1}{2}$	+56	-15	17 22.5	+ 5 9 29	+0.3757	.5255	+1.667	-9.1645	.9953
1	ϕ Aquarii	4 $\frac{1}{2}$	-12	-90	21 5.9	+ 8 46 22	-0.8168	.5254	+1.689	-9.0705	.9970
1	χ Aquarii	5 $\frac{1}{2}$	+82	+49	22 24.8	+10 2 57	+1.2682	.5252	+1.618	-9.1666	.9953
2	24 Piscium	6 $\frac{1}{2}$	+10	-65	17 19.0	+ 4 24 9	-0.4599	.5241	+1.786	-8.8306	.9990
2	27 Piscium	5 $\frac{1}{2}$	+69	-7	20 20.2	+ 7 20 6	+0.5234	.5240	+1.797	-8.8733	.9988
2	29 Piscium	5 $\frac{1}{2}$	+49	-22	21 59.1	+ 8 56 5	+0.2403	.5241	+1.802	-8.8164	9.9991
3	10 Ceti	6	-2	-85	10 57.6	- 2 28 3	-0.6724	.5243	+1.832	-8.1321	0.0000
3	14 Ceti	6 $\frac{1}{2}$	+85	+2	15 36.9	+ 2 3 6	+0.6756	.5249	+1.837	-8.3308	9.9999
3	15 Ceti	6	+89	+11	16 25.6	+ 2 50 24	+0.8226	.5249	+1.838	-8.3302	.9999
4	29 Ceti	6 $\frac{1}{2}$	+90	+23	8 27.1	- 5 36 21	+0.9991	.5272	+1.834	+8.3578	.9999
4	33 Ceti	6	+90	+7	9 47.0	- 4 18 48	+0.7628	.5275	+1.832	+8.4840	.9998
4	35 Ceti	6 $\frac{1}{2}$	+90	+17	10 48.1	- 3 19 30	+0.9154	.5275	+1.830	+8.4916	.9998
4	f Piscium	6	+45	-26	13 30.3	- 0 42 7	+0.1625	.5281	+1.826	+8.7074	.9994
4	B.A.C. 408	6 $\frac{1}{2}$	+2	-76	16 1.2	+ 1 44 16	-0.6058	.5287	+1.819	+8.6490	.9989
5	ν Piscium	4 $\frac{1}{2}$	+52	-19	1 33.5	+10 59 28	+0.2815	.5311	+1.793	+8.9246	.9985
5	64 Ceti	6 $\frac{1}{2}$	+10	-63	16 34.3	+ 1 32 55	-0.4581	.5358	+1.723	+9.1411	.9958
5	ϵ^1 Ceti	4 $\frac{1}{2}$	+1	-75	17 22.7	+ 2 19 48	-0.6157	.5362	+1.719	+9.1557	.9955
5	B.A.C. 741	6 $\frac{1}{2}$	+2	-73	23 3.2	+ 7 49 50	-0.6042	.5384	+1.685	+9.1999	.9945
6	B.A.C. 755	6	-70	-80	0 9.2	+ 8 53 44	-1.3354	.5386	+1.678	+9.2384	.9934
6	ϵ^2 Ceti	4	+90	+29	0 52.3	+ 9 35 31	+1.0421	.5390	+1.673	+9.1364	.9959
6	B.A.C. 830	6	+19	-49	7 50.3	- 7 39 35	-0.2871	.5420	+1.622	+9.2473	.9931
6	μ Ceti	4	+74	-1	9 1.2	- 6 30 56	+0.5690	.5424	+1.613	+9.2202	.9939
6	B.A.C. 987	6 $\frac{1}{2}$	-1	-74	21 39.1	+ 5 42 47	-0.6534	.5484	+1.500	+9.3370	.9895
7	f Tauri	4	+90	+12	6 48.6	- 9 25 39	+0.7461	.5533	+1.404	+9.3348	.9896
7	Wei. III. 1085	8 $\frac{1}{2}$	+64	-3	22 2.9	+ 5 17 55	+0.4413	.5617	+1.217	+9.4033	.9856
7	Wei. III. 1108	8	+90	+64	22 39.0	+ 5 52 45	+1.2882	.5621	+1.207	+9.3814	.9870
7	Wei. III. 1127	8	+90	+52	23 2.0	+ 6 15 1	+1.2148	.5621	+1.202	+9.3850	.9869
7	Wei. IV. 24	9	+73	+3	0 57.2	+ 8 6 16	+0.5487	.5630	+1.179	+9.4009	.9852
8	Lal. 7753	7 $\frac{1}{2}$	+25	-38	1 2.4	+ 8 11 18	-0.1871	.5630	+1.178	+9.4226	.9837
8	B.A.C. 1281	7	-19	-74	1 5.3	+ 8 14 4	-0.9177	.5630	+1.177	+9.4482	.9822
8	Rumk. 1103	7	+45	-18	1 9.6	+ 8 18 11	+0.1613	.5630	+1.177	+9.4209	.9844
8	Rumk. 1108	9	+90	+27	1 38.2	+ 8 45 49	+0.9404	.5633	+1.171	+9.4013	.9857
8	Rumk. 1114	9	+90	+63	1 51.2	+ 8 58 21	+1.2800	.5634	+1.168	+9.3925	.9863
8	Rumk. 1123	8 $\frac{1}{2}$	+90	+38	2 30.0	+ 9 35 49	+1.0775	.5637	+1.163	+9.4003	.9858
8	48 Tauri	6	+81	+8	3 13.0	+10 17 22	+0.6242	.5640	+1.151	+9.4149	.9848
8	Rumk. 1136	6	+25	-37	3 39.3	+10 42 48	-0.1832	.5642	+1.146	+9.4373	.9831
8	γ Tauri	4	+76	+5	5 0.2	-11 59 9	+0.5757	.5657	+1.118	+9.4216	.9843
8	55 Tauri	7	+15	-48	5 2.3	-11 57 10	-0.3506	.5657	+1.118	+9.4457	.9824
8	58 Tauri	6	+90	+48	5 22.6	-11 37 34	+1.1727	.5658	+1.113	+9.4066	.9854
8	Rumk. 1163	8	+3	-63	5 45.5	-11 15 24	-0.5804	.5660	+1.107	+9.4531	.9818
8	δ^1 Tauri	4	-63	-73	6 21.3	-19 40 51	-1.2894	.5664	+1.098	+9.4716	.9801
8	63 Tauri	6	+9	-55	6 35.2	-10 27 26	-0.4655	.5665	+1.095	+9.4525	.9818
8	B.A.C. 1351	6 $\frac{1}{2}$	+18	-44	6 36.8	-10 25 53	-0.3074	.5665	+1.095	+9.4477	.9821
8	δ^2 Tauri	6	-37	-73	6 52.3	-10 10 55	-1.1334	.5666	+1.091	+9.4693	.9803
8	Lal. 8249	7 $\frac{1}{2}$	-7	-72	6 59.8	-10 3 40	-0.7396	.5667	+1.089	+9.4603	.9811
8	Lal. 8256	8	+5	-59	7 2.6	-10 1 1	-0.5314	.5669	+1.088	+9.4554	.9815
8	70 Tauri	7	+70	+2	7 34.9	- 9 29 47	+0.5130	.5671	+1.078	+9.4306	.9836
8	Lal. 8311	8	+90	+31	7 47.8	- 9 17 25	+0.9685	.5672	+1.076	+9.4193	.9845
8	Rumk. 1188	6 $\frac{1}{2}$	+90	+31	7 47.9	- 9 17 15	+0.9698	.5672	+1.076	+9.4192	.9845
8	Rumk. 1189	8	+12	-50	7 54.4	- 9 11 2	-0.4008	.5673	+1.074	+9.4546	.9816
8	71 Tauri	6	+90	+25	7 54.5	- 9 10 55	+0.8835	.5673	+1.074	+9.4219	.9843
8	Rumk. 1192	8	-6	-73	7 57.5	- 9 8 3	-0.7191	.5673	+1.074	+9.4623	.9809
8	Rumk. 1198	6	+90	+34	8 14.4	- 8 51 40	+1.0179	.5675	+1.070	+9.4192	.9845
8	Rumk. 1200	8	+90	+31	8 27.6	- 8 38 57	+0.9680	0.5676	+1.067	+9.4211	9.9843

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF
PLANETS AND STARS BY THE MOON, FOR THE YEAR 1868.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ϕ .	At Washington Mean Time of Conjunction.					
			North- ern.	South- ern.		H	Y	p'	q'	Log sin D	Log cos D
Sept. 8	Ramk. 1203		+51	-12	^h 46.8	^m 20 27	+0.2561	0.5678	+1.062	+9.4404	9.9828
	75 Tauri	6	+47	-15	8 49.5	8 17 51	+0.2007	5678	+1.061	+9.4420	.9827
8	δ^1 Tauri	4½	+81	+9	8 53.1	8 14 22	+0.6203	5678	+1.060	+9.4314	.9835
8	δ^2 Tauri	4½	+90	+14	8 55.6	8 11 56	+0.7203	5678	+1.060	+9.4289	.9837
8	Ramk. 1210		+63	+1	9 3.8	8 4 2	+0.4315	5679	+1.059	+9.4368	.9831
8	Ramk. 1212	6	-32	-73	9 11.2	7 56 52	-1.0854	5680	+1.058	+9.4721	.9800
8	80 Tauri	6	+90	+35	9 35.1	7 33 49	+1.0280	5682	+1.050	+9.4227	.9842
8	B.A.C. 1391	5	+66	0	9 45.3	7 23 57	+0.4634	5683	+1.048	+9.4378	.9830
8	81 Tauri	5½	+90	+33	9 48.4	7 20 58	+0.9033	5683	+1.047	+9.4242	.9841
8	B.A.C. 1394	7	+70	+3	9 51.3	7 18 11	+0.5153	5683	+1.046	+9.4367	.9831
8	Ramk. 1227	7	+90	+26	10 7.1	7 2 56	+0.8943	5685	+1.042	+9.4277	.9838
8	85 Tauri	6	+90	+25	10 22.2	6 50 17	+0.8778	5688	+1.038	+9.4287	.9838
8	Ramk. 1232		+42	-19	10 32.9	6 38 3	+0.1172	5689	+1.035	+9.4486	.9821
8	Ramk. 1233		-44	-73	10 39.2	6 32 0	-1.1915	5690	+1.033	+9.4800	.9792
8	Ramk. 1235		+90	+17	10 45.5	6 25 55	+0.7568	5690	+1.032	+9.4329	.9834
8	B.A.C. 1406	7	+66	0	11 6.7	6 5 27	+0.4589	5692	+1.026	+9.4415	.9827
8	Ramk. 1238	10	+54	-9	11 28.2	5 44 40	+0.2984	5694	+1.021	+9.4464	.9823
8	Lal. 8509	9	-24	-73	11 32.5	5 40 35	-0.9913	5695	+1.020	+9.4775	.9795
8	Lal. 8610	8	+24	-36	11 41.0	5 32 20	-0.1931	5695	+1.017	+9.4590	.9812
8	Lal. 8613	8	+13	-49	11 42.4	5 31 1	-0.4020	5696	+1.017	+9.4641	.9808
8	α Tauri	1	+58	-6	12 6.4	5 7 46	+0.3530	5698	+1.011	+9.4469	.9823
8	89 Tauri	7	+90	+30	13 5.9	4 10 28	+0.9478	5703	+0.996	+9.4341	.9833
8	α^1 Tauri	5½	+90	+57	13 32.5	3 44 48	+1.2314	5706	+0.989	+9.4279	.9838
8	α^2 Tauri	5½	+90	+43	13 35.3	3 42 5	+1.1140	5706	+0.988	+9.4311	.9836
8	Ramk. 1241		+70	+3	13 50.9	3 27 3	+0.5073	5708	+0.983	+9.4471	.9823
8	Ramk. 1243	8	+72	+5	14 4.4	3 14 1	+0.5354	5709	+0.979	+9.4470	.9823
8	Ramk. 1246	7	+15	-46	14 32.9	2 46 30	-0.3575	5712	+0.972	+9.4697	.9802
8	Ramk. 1247		+59	-4	14 33.2	2 46 11	+0.3787	5712	+0.972	+9.4517	.9819
8	Ramk. 1254		+63	-1	14 49.9	2 30 7	+0.4391	5714	+0.967	+9.4514	.9819
8	Ramk. 1255		+90	+50	14 51.1	2 28 56	+1.1754	5714	+0.967	+9.4327	.9834
8	Lal. 8852	9½	+24	-36	15 10.4	2 10 22	-0.1981	5716	+0.962	+9.4674	.9804
8	Ramk. 1263	9½	+90	+49	15 50.1	1 32 1	+1.1671	5720	+0.951	+9.4353	.9832
8	Ramk. 1283	7	+90	+16	17 39.8	0 13 43	+0.7216	5730	+0.921	+9.4508	.9819
8	Ramk. 1294		+90	+60	18 35.6	1 7 33	+1.2442	5735	+0.906	+9.4398	.9829
8	Ramk. 1299	7½	+21	-39	19 1.0	1 32 4	-0.2609	5738	+0.899	+9.4773	.9795
8	Ramk. 1300		+24	-35	19 3.5	1 34 26	-0.2023	5738	+0.898	+9.4760	.9796
8	B.A.C. 1526	6	+68	+3	21 24.8	3 50 41	+0.4901	5749	+0.856	+9.4645	.9807
9	m Tauri	5½	-7	-72	1 39.8	7 56 28	-0.7377	5777	+0.782	+9.5007	.9771
9	111 Tauri	6	+90	+40	8 54.3	9 4 56	+1.0320	5814	+0.955	+9.4723	.9800
9	115 Tauri	5½	+69	+6	10 3.6	8 58 10	+0.4997	5821	+0.934	+9.4864	.9786
9	117 Tauri	6	+90	+66	10 26.3	7 36 20	+1.2647	5824	+0.925	+9.4690	.9803
9	119 Tauri	5½	+32	-24	12 9.7	5 56 43	-0.0557	5832	+0.959	+9.5013	.9770
9	120 Tauri	6	+38	-18	12 42.8	5 24 51	+0.0452	5836	+0.953	+9.5002	.9771
9	130 Tauri	6	+90	+51	18 31.2	0 10 35	+1.1387	5867	+0.947	+9.4823	.9790
9	χ^2 Orionis	6	-13	-71	21 34.5	3 7 1	-0.8238	5880	+0.941	+9.5282	.9737
10	χ^3 Orionis	5	-2	-64	1 4.5	6 29 5	-0.6580	5894	+0.934	+9.5275	.9738
10	χ^4 Orionis	5	-36	-70	1 15.2	6 39 23	-1.1112	5894	+0.933	+9.5369	.9726
10	71 Orionis	5½	+34	-18	5 44.9	10 58 46	-0.0175	5917	+0.925	+9.5169	.9752
10	ν Geminor	4½	-28	-70	11 26.6	7 32 38	-1.0257	5940	+0.9124	+9.5401	.9722
11	B.A.C. 2432	6½	+73	+11	9 8.0	-10 42 0	+0.5336	6003	+0.931	+9.5020	.9769
11	f Geminor	6	+90	+26	15 37.3	4 28 2	+0.8173	6017	+0.9485	+9.4893	.9783
11	g Geminor	5½	+25	-30	18 14.0	1 57 33	-0.1757	6021	+0.938	+9.5088	.9761
12	3 Cancri	6	+84	+14	0 2.3	3 36 57	+0.6358	6027	+0.964	+9.4821	.9790
12	B.A.C. 2683	6	-27	-71	1 34.3	5 5 23	-1.0123	6028	+0.909	+9.5173	.9751
12	B.A.C. 2731	6½	+85	+14	3 40.7	7 6 44	+0.6445	6028	+0.9743	+9.4757	.9796

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1868.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Wash- ington Mean Time of Conj.	At Washington Mean Time of Conjunction.					
			North- ern.	South- ern.		<i>H</i>	<i>Y</i>	<i>p'</i>	<i>q'</i>	Log sin <i>D</i>	Log cos <i>D</i>
					^h ^m ^s	^h ^m ^s					
Sept. 12	♄ ¹ Canceri	4½	+32	-25	4 31.7	+ 7 55 42	-0.0598	0.6028	-0.0762	+9.4909	9.9781
12	♄ ² Canceri	7½	+32	-25	4 31.8	+ 7 55 49	-0.0572	.6028	-0.0762	+9.4909	.9781
12	♄ ³ Canceri	6	-36	-71	8 55.1	-11 51 19	-1.1205	.6030	-0.0851	+9.5071	.9763
12	♄ ⁴ Canceri	6	+39	-20	9 55.4	-10 53 24	+0.0621	.6030	-0.0872	+9.4776	.9795
12	♄ ⁵ Canceri	6	-45	-72	12 10.2	- 8 44 0	-1.1926	.6030	-0.0917	+9.5023	.9769
12	Venus		+90	+51	13 28.9	- 7 28 22	+1.1828	.5695	-0.0908	+9.4411	.9828
12	♄ ⁵⁴ Canceri	6½	+90	+15	19 53.5	- 1 18 59	+0.7201	.6023	-0.1072	+9.4360	.9832
12	♄ ⁵¹ Canceri	6	+66	0	22 20.6	+ 1 2 20	+0.4615	.6020	-0.1117	+9.4357	.9832
12	♄ ⁵³ Canceri	6	+47	-15	22 28.4	+ 1 9 47	+0.1902	.6019	-0.1124	+9.4426	.9826
13	♄ ¹ Canceri	6½	+38	-24	4 21.0	+ 6 48 27	+0.0525	.6012	-0.1127	+9.4275	.9838
13	♄ ² Canceri	6	+33	-30	5 29.2	+ 7 54 4	-0.0505	.6010	-0.1254	+9.4265	.9839
13	♄ ⁷ Leonis	6½	0	-69	13 43.6	- 8 10 59	-0.6257	.5994	-0.1306	+9.4120	.9850
13	♄ ¹⁸ Leonis	6	+90	+60	17 57.9	- 4 6 35	+1.2817	.5984	-0.1463	+9.3324	.9897
13	♄ ⁷ Leonis	5	+31	-34	22 42.9	+ 0 27 19	-0.0783	.5970	-0.1537	+9.3544	.9886
14	♄ ¹ Leonis	1½	+21	-46	2 49.8	+ 4 24 42	-0.2680	.5962	-0.1597	+9.3391	.9894
14	♄ ⁴⁵ Leonis	6	+76	+ 1	10 39.7	+11 56 37	+0.5836	.5939	-0.1701	+9.2579	.9928
14	♄ ⁷ Leonis	4	+85	+ 5	12 46.4	-10 1 32	+0.6642	.5933	-0.1726	+9.2389	.9934
17	♄ ⁴⁸ Virginis	6	+87	+27	4 35.1	+ 3 26 22	+1.0646	.5741	-0.2006	-8.7117	.9994
17	♄ ⁶⁵ Virginis	6	+83	+ 1	13 2.5	+11 35 50	+0.6679	.5721	-0.1976	-8.8681	.9988
17	♄ ⁶⁶ Virginis	6	+86	+10	13 34.3	-11 53 32	+0.8048	.5719	-0.1971	-8.8920	.9987
17	♄ ⁷ Virginis	5	+85	+49	16 49.6	- 8 45 5	+1.2744	.5713	-0.1954	-8.9873	.9979
17	♄ ⁸⁰ Virginis	6	+41	-29	18 23.2	- 7 14 59	+0.1149	.5708	-0.1944	-8.9156	.9985
18	♄ ⁹⁴ Virginis	6	+82	+33	7 54.8	+ 5 48 22	+1.1236	.5685	-0.1852	-9.1574	.9955
19	♄ ⁵¹ Libræ	6	+68	- 4	5 13.9	+ 2 23 1	+0.5669	.5657	-0.1641	-9.2943	.9914
19	♄ ⁵² Libræ	6	+26	-41	6 18.0	+ 3 24 58	-0.1047	.5656	-0.1628	-9.2757	.9921
19	♄ ¹⁸ Libræ, pr.	6½	+ 2	-71	7 15.8	+ 4 20 41	-0.5330	.5652	-0.1618	-9.2651	.9925
19	B.A.C. 5070	6	-24	-90	18 24.1	- 8 54 1	-0.9330	.5640	-0.1475	-9.3141	.9906
19	♄ ⁷ Libræ	4½	+76	+15	23 34.3	- 3 54 29	+0.8698	.5636	-0.1405	-9.3941	.9862
20	♄ ⁴⁸ Libræ	4½	-28	-90	9 45.9	+ 5 56 12	-0.9625	.5626	-0.1260	-9.3805	.9871
20	♄ ⁴⁹ Libræ	5½	+74	+56	10 43.2	+ 6 51 30	+1.2744	.5626	-0.1246	-9.4440	.9825
21	♄ ⁹ Ophiuchi	5	+19	-42	0 34.3	- 3 45 51	-0.1100	.5608	-0.1030	-9.4487	.9821
21	♄ ²⁴ Scorpii	5	+63	+ 2	5 15.6	+ 0 45 51	+0.6564	.5607	-0.0957	-9.4777	.9795
21	B.A.C. 5695	6	-27	-90	11 49.6	+ 7 6 29	-0.8853	.5599	-0.0847	-9.4556	.9815
21	♄ ²⁹ Ophiuchi	6	+72	+38	14 25.5	+ 9 37 9	+1.1361	.5595	-0.0802	-9.5057	.9765
21	B.A.C. 5771	6½	- 1	-64	17 21.6	-11 32 45	-0.4322	.5594	-0.0757	-9.4765	.9796
21	B.A.C. 5839	6½	-12	-81	22 30.4	- 6 25 44	-0.6155	.5587	-0.0664	-9.4809	.9791
22	B.A.C. 6060	6	+ 6	-50	15 7.3	+ 9 28 55	-0.2327	.5563	-0.0382	-9.5076	.9762
23	B.A.C. 6237	6	-16	-78	6 58.1	+ 0 48 2	-0.5864	.5533	-0.0107	-9.5083	.9712
23	B.A.C. 6292	6	- 6	-61	7 29.8	+ 1 18 44	-0.3946	.5531	-0.0096	-9.5123	.9757
23	B.A.C. 6293	6½	-50	-90	7 32.8	+ 1 21 34	-1.0922	.5531	-0.0095	-9.4980	.9773
23	B.A.C. 6294	6	-38	-90	7 33.4	+ 1 22 14	-0.9391	.5531	-0.0095	-9.5012	.9770
23	♄ ²⁹ Sagittarii	6	+70	+48	16 0.8	+ 9 32 50	+1.2045	.5516	+0.0048	-9.5437	.9717
24	B.A.C. 6536	6	+31	-21	0 47.1	- 5 58 5	+0.2432	.5498	+0.0197	-9.5233	.9744
24	♄ ⁴ Sagittarii	5	+18	-35	5 12.9	- 1 40 56	+0.0070	.5489	+0.0268	-9.5166	.9752
24	♄ ¹ Sagittarii	4	-52	-90	7 9.4	+ 0 11 47	-1.1379	.5485	+0.0302	-9.4921	.9780
24	♄ ⁵ Sagittarii	5½	-17	-84	7 13.2	+ 0 15 26	-0.6334	.5485	+0.0302	-9.5025	.9768
24	B.A.C. 6658	6	- 6	-66	10 11.4	+ 3 7 50	-0.4558	.5478	+0.0351	-9.5042	.9766
24	♄ ⁵⁷ Sagittarii	5½	+71	+17	21 42.3	- 9 43 25	+0.8894	.5449	+0.0538	-9.5208	.9747
25	♄ ^π Capricor	5	+72	+48	14 45.6	+ 6 47 22	+1.2179	.5407	+0.0796	-9.5046	.9766
25	♄ ^π Capricor, pr.	5	+72	+14	15 31.3	+ 7 31 42	+0.8431	.5407	+0.0808	-9.4956	.9776
25	B.A.C. 7043	6	+49	-11	15 35.4	+ 7 35 36	+0.4278	.5407	+0.0809	-9.4868	.9785
25	B.A.C. 7097	6	+ 8	-53	18 49.0	+10 43 12	-0.2898	.5398	+0.0854	-9.4653	.9806
25	B.A.C. 7145	6	- 3	-69	21 17.9	-10 52 34	-0.5007	.5391	+0.0887	-9.4556	.9815
26	♄ ²⁹ Capricor	6½	+44	-19	14 47.7	+ 6 4 48	+0.2933	.5347	+0.1122	-9.4327	.9834
27	B.A.C. 7487	6½	+ 5	-63	0 8.9	- 8 51 9	-0.4338	.5328	+0.1234	-9.3856	.9863

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF
PLANETS AND STARS BY THE MOON, FOR THE YEAR 1868.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Wash- ington Mean Time of δ.	At Washington Mean Time of Conjunction.					
			North- ern.	South- ern.		H	Y	p'	q'	Log sin D	Log cos D
Sept. 27	42 Capricor	6	+72	+1	h m	h m s					
	44 Capricor	6	+75	+39	3 49.5	-5 17 11	+0.6560	.5321	+1.278	-9.4024	9.9857
27	μ Capricor	5	+76	+18	4 35.1	-4 32 59	+1.1620	.5320	+1.288	-9.4121	.9849
27	α Aquarii	6	+17	-90	9 46.1	+0 28 38	+0.9221	.5310	+1.344	-9.3887	.9866
27	ε Aquarii	6	+30	-36	18 37.8	+9 4 22	-0.8416	.5215	+1.435	-9.2143	.9912
27	ε Aquarii	6	+30	-36	18 40.4	+9 6 54	-0.0117	.5295	+1.436	-9.3252	.9901
28	α Aquarii	4	+68	-4	4 58.8	-4 53 2	+0.5651	.5278	+1.531	-9.2039	.9914
28	58 Aquarii	6	+79	+16	5 30.7	-4 22 8	+0.8993	.5277	+1.537	-9.3024	.9912
28	64 Aquarii	6½	+67	-5	9 26.8	-0 32 58	+0.5503	.5272	+1.571	-9.2690	.9924
28	λ Aquarii	4	-28	-90	16 22.5	+6 10 28	-1.0304	.5264	+1.625	-9.1582	.9954
28	78 Aquarii	6	-54	-90	17 23.8	+7 9 55	-1.2403	.5264	+1.633	-9.1380	.9959
28	81 Aquarii	6	-15	-90	20 56.5	+10 36 22	-0.8472	.5260	+1.658	-9.1305	.9960
28	h¹ Aquarii	6*	+44	-26	22 53.2	-11 30 20	+0.1798	.5259	+1.671	-9.1646	.9953
28	h² Aquarii	7	+49	-21	22 58.3	-11 25 23	+0.2605	.5259	+1.672	-9.1676	.9953
28	h³ Aquarii	7	+66	-7	23 15.8	-11 8 23	+0.5110	.5259	+1.673	-9.1761	.9950
28	h⁴ Aquarii	7½	+55	-16	23 56.3	-10 29 6	+0.3549	.5259	+1.678	-9.1645	.9953
29	φ Aquarii	4½	-13	-90	3 40.1	-6 51 53	-0.8276	.5258	+1.703	-9.0705	.9970
29	χ Aquarii	5½	+82	+47	4 58.6	-5 35 40	+1.2549	.5256	+1.711	-9.1667	.9953
29	24 Piscium	6½	+11	-64	23 47.8	-11 19 35	-0.4476	.5226	+1.804	-8.8306	.9990
30	27 Piscium	5½	+70	-6	2 47.9	-8 24 42	+0.5364	.5254	+1.815	-8.8733	.9988
30	29 Piscium	5½	+50	-21	4 26.1	-6 49 22	+0.2563	.5256	+1.821	-8.8164	9.9991
30	10 Ceti	6	0	-80	17 19.0	+5 40 52	-0.6369	.5266	+1.853	-8.1318	0.0000
30	14 Ceti	6½	+89	+4	21 56.1	+10 9 44	+0.7119	.5272	+1.858	-8.3306	9.9999
30	15 Piscium	6	+89	+13	22 44.4	+10 56 38	+0.8594	.5275	+1.860	-8.3209	.9999
Oct. 1	29 Ceti	6½	+90	+27	14 37.0	+2 21 1	+1.0554	.5304	+1.858	-8.3580	.9999
1	33 Ceti	6	+90	+11	16 56.2	+4 37 48	+0.8215	.5305	+1.856	-8.4842	.9998
1	35 Ceti	6½	+90	+21	16 56.7	+4 36 29	+0.9750	.5308	+1.855	-8.4918	.9996
1	γ Piscium	6	+49	-23	19 37.2	+7 12 12	+0.2282	.5315	+1.850	-8.7076	.9994
1	B.A.C. 408	6½	+6	-70	22 6.6	+9 37 7	-0.5342	.5320	+1.845	-8.8492	.9989
2	γ Piscium	4½	+58	-15	7 33.0	-5 13 37	+0.3622	.5344	+1.817	-8.9247	.9984
2	64 Ceti	6½	+16	-55	22 24.7	+9 10 45	-0.3583	.5306	+1.747	-9.1411	.9958
2	ξ¹ Ceti	4½	+7	-66	23 12.6	+9 57 8	-0.5139	.5398	+1.744	-9.1558	.9955
3	B.A.C. 741	6½	+8	-64	4 49.9	-8 36 5	-0.4958	.5417	+1.708	-9.1999	.9945
3	B.A.C. 755	6	-43	-80	5 55.2	-7 32 49	-1.2241	.5422	+1.701	-9.2384	.9934
3	ξ² Ceti	4	+90	+37	6 38.0	-6 51 26	+1.1479	.5425	+1.695	-9.1365	.9959
3	B.A.C. 830	6	+26	-42	13 32.3	-0 10 13	-0.1708	.5454	+1.643	-9.2473	.9931
3	μ Ceti	4	+88	+6	14 42.6	+0 57 52	+0.6849	.5459	+1.633	-9.2202	.9939
4	B.A.C. 987	6½	+7	-64	3 15.0	-10 53 56	-0.5240	.5512	+1.519	-9.3370	.9895
4	γ Tauri	4	+90	+21	12 21.7	-2 5 14	+0.8833	.5554	+1.421	-9.3348	.9896
5	Wei. III. 1085	8½	+78	+5	3 33.9	-11 23 47	+0.5911	.5627	+1.225	-9.4033	.9856
5	Wei. IV. 24	9	+90	+12	6 28.2	-8 35 27	+0.7006	.5642	+1.184	-9.4099	.9852
5	Lal. 7753	7½	+33	-29	6 33.4	-8 30 24	-0.0370	.5643	+1.183	-9.4297	.9837
5	B.A.C. 1281	7	-9	-74	6 36.2	-8 27 39	-0.7693	.5643	+1.182	-9.4482	.9822
5	Rumk. 1103	7	+55	-10	6 40.5	-8 23 32	+0.3124	.5643	+1.182	-9.4209	.9844
5	Rumk. 1108	9	+90	+39	7 9.2	-7 55 51	+1.0942	.5643	+1.176	-9.4013	.9857
5	Rumk. 1123	8½	+90	+55	8 1.0	-7 5 47	+1.2323	.5647	+1.150	-9.4003	.9858
5	48 Tauri	6	+90	+17	8 44.1	-6 24 14	+0.7780	.5651	+1.142	-9.4149	.9848
5	Rumk. 1136	6	+34	-28	9 11.4	-5 57 52	-0.0295	.5653	+1.136	-9.4373	.9831
5	γ Tauri	4	+90	+14	10 31.4	-4 40 36	+0.7308	.5660	+1.120	-9.4216	.9843
5	55 Tauri	7	+24	-38	10 33.5	-4 38 34	-0.2074	.5660	+1.120	-9.4457	.9824
5	Rumk. 1163	9	+11	-52	11 16.9	-3 56 43	-0.4288	.5664	+1.111	-9.4531	.9817
5	δ¹ Tauri	4	-37	-73	11 52.7	-3 22 4	-1.1395	.5667	+1.104	-9.4716	.9800
5	63 Tauri	6	+18	-44	12 6.7	-3 8 37	-0.3128	.5668	+1.102	-9.4525	.9818
5	B.A.C. 1351	6½	+27	-35	12 8.3	-3 7 6	-0.1542	.5668	+1.101	-9.4487	.9821
5	δ² Tauri	6	-23	-73	12 23.8	-2 52 5	-0.9831	.5669	+1.098	-9.4693	.9803
5	Lal. 8249	7½	+2	-64	12 31.4	-2 44 47	-0.5878	.5670	+1.097	-9.4603	.9811

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1868.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of δ .	At Washington Mean Time of Conjunction.					
			North- ern.	South- ern.		H	Y	p'	q'	Log sin D	Log cos D
Oct. 5	Lal. 8256	8	+14	-48	12 34.1	- 2 42 11	-0.3789	0.5670	+1.096	+9.4553	9.9816
	70 Tauri	7	+88	+11	13 6.5	- 2 10 50	+0.6694	.5673	+1.087	+9.4306	.9836
	Lal. 8311	8	+90	+42	13 19.4	- 1 58 28	+1.1267	.5674	+1.084	+9.4193	.9845
	Rumk. 1188	6½	+90	+44	13 19.6	- 1 58 17	+1.1282	.5674	+1.084	+9.4192	.9845
5	Rumk. 1189	6½	+21	-40	13 26.0	- 1 52 2	-0.2565	.5674	+1.083	+9.4547	.9816
5	71 Tauri	6	+90	+36	13 26.2	- 1 51 54	+1.0416	.5674	+1.083	+9.4218	.9843
5	Rumk. 1192	6	+ 4	-62	13 29.1	- 1 49 3	-0.5669	.5675	+1.082	+9.4623	.9809
5	Rumk. 1198	6	+90	+49	13 46.1	- 1 32 37	+1.1765	.5676	+1.077	+9.4192	.9845
5	Rumk. 1200	6	+90	+44	13 59.3	- 1 19 53	+1.1269	.5677	+1.074	+9.4212	.9843
5	Rumk. 1203	6	+62	- 3	14 18.5	- 1 1 20	+0.4122	.5678	+1.069	+9.4405	.9828
5	75 Tauri	6	+58	- 6	14 21.3	- 0 58 44	+0.3565	.5678	+1.068	+9.4420	.9827
5	81 Tauri	4½	+90	+18	14 24.9	- 0 55 15	+0.7777	.5678	+1.067	+9.4314	.9835
5	82 Tauri	4½	+90	+24	14 27.4	- 0 52 46	+0.8782	.5679	+1.067	+9.4290	.9838
5	Rumk. 1210	6	+78	+ 7	14 35.6	- 0 44 52	+0.5886	.5679	+1.065	+9.4368	.9831
5	Rumk. 1212	6	-14	-73	14 43.1	- 0 37 40	-0.9539	.5679	+1.063	+9.4721	.9800
5	Rumk. 1214	7	-42	-73	14 47.0	- 0 33 56	-1.1803	.5679	+1.063	+9.4798	.9792
5	Rumk. 1215	7	-46	-73	14 47.5	- 0 33 23	-1.2117	.5679	+1.063	+9.4806	.9792
5	80 Tauri	6	+90	+50	15 7.0	- 0 14 32	+1.1877	.5681	+1.057	+9.4227	.9842
5	B.A.C. 1391	5	+81	+ 9	15 17.3	- 0 4 39	+0.6210	.5682	+1.054	+9.4378	.9830
5	81 Tauri	5½	+90	+46	15 20.5	- 0 1 35	+1.1532	.5682	+1.053	+9.4242	.9841
5	B.A.C. 1394	7	+88	+12	15 23.3	+ 0 1 7	+0.6731	.5682	+1.052	+9.4367	.9831
5	Rumk. 1227	7	+90	+37	15 39.1	+ 0 16 27	+1.0537	.5683	+1.048	+9.4277	.9838
5	85 Tauri	6	+90	+36	15 52.3	+ 0 29 7	+1.0378	.5684	+1.045	+9.4287	.9838
5	Rumk. 1232	6	+52	-10	16 5.0	+ 0 41 24	+0.2739	.5685	+1.041	+9.4486	.9821
5	Rumk. 1233	6	-28	-73	16 11.3	+ 0 47 29	-1.0399	.5686	+1.039	+9.4800	.9792
5	Rumk. 1235	6	+90	+27	16 17.6	+ 0 53 34	+0.9162	.5686	+1.038	+9.4329	.9834
5	B.A.C. 1406	7	+81	+ 9	16 38.9	+ 1 14 9	+0.6173	.5688	+1.032	+9.4415	.9827
5	Rumk. 1238	10	+66	0	17 0.6	+ 1 35 0	+0.4566	.5691	+1.027	+9.4464	.9823
5	Lal. 8599	9	-13	-73	17 4.8	+ 1 39 7	-0.8385	.5691	+1.026	+9.4775	.9795
5	Lal. 8610	8	+34	-27	17 13.4	+ 1 47 23	-0.0370	.5692	+1.024	+9.4590	.9812
5	Lal. 8613	8	+22	-39	17 14.8	+ 1 48 43	-0.2459	.5692	+1.023	+9.4641	.9808
5	α Tauri	1	+70	+ 3	17 38.9	+ 2 11 58	+0.5117	.5694	+1.017	+9.4467	.9823
5	89 Tauri	7	+90	+43	18 38.6	+ 3 9 36	+1.1097	.5698	+1.001	+9.4341	.9833
5	δ Tauri	5½	+90	+65	19 8.2	+ 3 38 9	+1.2764	.5701	+0.993	+9.4311	.9836
5	Rumk. 1241	5½	+88	+12	19 23.8	+ 3 53 14	+0.6673	.5702	+0.989	+9.4471	.9823
5	Rumk. 1243	8	+90	+14	19 37.4	+ 4 6 19	+0.6958	.5703	+0.985	+9.4470	.9823
5	Rumk. 1246	7	+24	-36	20 6.1	+ 4 34 0	-0.2007	.5705	+0.977	+9.4697	.9802
5	Rumk. 1247	7	+73	+ 5	20 6.4	+ 4 34 20	+0.5386	.5705	+0.977	+9.4520	.9818
5	Rumk. 1254	7	+78	+ 8	20 23.1	+ 4 50 26	+0.5894	.5707	+0.973	+9.4514	.9819
5	Lal. 8852	9½	+33	-27	20 43.7	+ 5 10 18	-0.0402	.5708	+0.967	+9.4674	.9804
5	Rumk. 1276	6	-35	-72	22 30.8	+ 6 53 38	-1.1128	.5717	+0.936	+9.4951	.9776
5	Rumk. 1283	7	+90	+26	23 13.9	+ 7 35 13	+0.8851	.5717	+0.929	+9.4508	.9819
6	Rumk. 1299	7½	+30	-30	0 35.7	+ 8 54 4	-0.1017	.5725	+0.902	+9.4773	.9795
6	Rumk. 1300	7	+33	-26	0 38.1	+ 8 56 28	-0.0429	.5725	+0.902	+9.4760	.9796
6	Rumk. 1302	7	-46	-72	0 39.7	+ 8 57 56	-1.2034	.5727	+0.901	+9.5020	.9769
6	B.A.C. 1526	6	+86	+13	3 0.4	+11 13 41	+0.6543	.5736	+0.863	+9.4645	.9807
6	m Tauri	5½	+ 3	-60	7 17.4	- 8 38 32	-0.5790	.5753	+0.789	+9.5007	.9770
6	111 Tauri	6	+90	+56	14 36.3	- 1 35 33	+1.2042	.5786	+0.655	+9.4723	.9800
6	115 Tauri	5½	+89	+16	15 46.4	- 0 27 56	+0.6693	.5790	+0.634	+9.4863	.9786
6	119 Tauri	5½	+43	-14	17 54.1	+ 1 35 5	+0.1276	.5798	+0.595	+9.5013	.9770
6	120 Tauri	6	+48	- 9	18 27.6	+ 2 7 21	+0.2121	.5802	+0.582	+9.5002	.9771
7	γ^1 Orionis	4½	-50	-70	3 12.7	+10 33 9	-1.2190	.5832	+0.417	+9.5392	.9723
7	γ^2 Orionis	6	- 8	-64	3 27.0	+10 46 54	-0.6599	.5842	+0.408	+9.5282	.9737
7	γ^3 Orionis	5	+ 7	-49	7 0.5	- 9 47 32	-0.4958	.5847	+0.340	+9.5275	.9738
7	γ^4 Orionis	5	-22	-70	7 11.4	- 9 37 3	-0.9539	.5847	+0.338	+9.5369	.9726

**ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF
PLANETS AND STARS BY THE MOON, FOR THE YEAR 1868.**

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of 6.	At Washington Mean Time of Conjunction.					
			North-ern.	South-ern.		<i>H</i>	<i>Y</i>	<i>p'</i>	<i>q'</i>	Log sin <i>D</i>	Log cos <i>D</i>
Oct. 7	68 Orionis	6	+ 6	-51	10 34.3	- 6 21 43	-0.5183	0.5859	+.0266	+9.5302	9.9734
	71 Orionis	5½	+44	- 9	11 46.0	- 5 12 45	+0.1452	.5861	+.0243	+9.5169	.9751
7	16 Geminor	6	-42	-70	17 9.0	- 0 1 48	-1.1617	.5878	+.0135	+9.5457	.9714
7	γ Geminor	4½	-16	-70	17 34.5	+ 0 22 45	-0.8686	.5878	+.0123	+9.5401	.9722
8	B.A.C. 2432	6½	+90	+21	15 47.6	- 2 14 52	+0.7053	.5917	-.0341	+9.5020	.9769
8	f Geminor	6	+90	+38	22 28.5	+ 4 10 44	+0.9906	.5922	-.0482	+9.4893	.9783
9	g Geminor	5½	+34	-21	1 9.9	+ 6 45 58	-0.0180	.5925	-.0535	+9.5088	.9761
9	3 Cancri	6	+90	+24	7 8.9	-11 28 47	+0.8028	.5926	-.0658	+9.4821	.9790
9	B.A.C. 2683	6	-16	-71	8 44.0	- 9 57 23	-0.8714	.5926	-.0692	+9.5172	.9751
9	B.A.C. 2731	6½	+90	+24	10 54.4	- 7 51 59	+0.8095	.5926	-.0736	+9.4757	.9796
9	1 st Cancri	4½	+41	-17	11 47.0	- 7 1 21	+0.0938	.5925	-.0754	+9.4909	.9781
9	2 nd Cancri	7½	+41	-17	11 47.1	- 7 1 15	+0.0965	.5925	-.0754	+9.4909	.9781
9	3 rd Cancri	6	-24	-71	16 19.0	- 2 39 45	-0.9824	.5922	-.0841	+9.5071	.9763
9	4 th Cancri	6	+48	-11	17 21.3	- 1 39 50	+0.2137	.5924	-.0862	+9.4776	.9795
9	δ Cancri	6	-30	-72	19 40.6	+ 0 34 8	-1.0622	.5921	-.0910	+9.5023	.9769
10	54 Cancri	6½	+90	+24	3 39.6	+ 8 14 51	+0.8740	.5911	-.1062	+9.4360	.9832
10	α ¹ Cancri	6	+80	+ 8	6 11.8	+10 41 12	+0.6095	.5909	-.1107	+9.4357	.9832
10	α ² Cancri	6	+56	- 7	6 19.8	+10 48 56	+0.3336	.5909	-.1109	+9.4425	.9826
10	π ¹ Cancri	6½	+47	-16	12 24.5	- 7 20 14	+0.1879	.5901	-.1221	+9.4275	.9838
10	π ² Cancri	6	+40	-22	13 35.1	- 6 12 17	+0.0821	.5898	-.1241	+9.4265	.9839
10	7 Leonis	6½	+ 7	-60	22 6.5	+ 1 59 43	-0.5112	.5883	-.1380	+9.4119	.9850
11	γ Leonis	5	+38	-28	7 24.0	+10 56 18	+0.0337	.5864	-.1524	+9.3544	.9886
11	α Leonis	1½	+26	-40	11 39.0	- 8 58 10	-0.1642	.5856	-.1583	+9.3390	.9894
11	45 Leonis	6	+88	+ 6	19 44.0	- 1 11 13	+0.6885	.5838	-.1637	+9.2578	.9928
11	Venus	6	+90	+23	21 13.6	+ 0 15 6	+0.9480	.5421	-.1575	+9.2362	.9934
11	ε Leonis	4	+90	+11	21 54.6	+ 0 54 34	+0.7663	.5833	-.1713	+9.2389	.9934
11	49 Leonis	6	+90	+51	22 51.4	+ 1 49 16	+1.2560	.5830	-.1723	+9.2098	.9942
12	χ Leonis	5	+51	-19	11 34.7	- 9 55 26	+0.2553	.5804	-.1853	+9.1461	.9957
12	B.A.C. 3837	6½	-39	-81	15 23.6	- 6 14 53	-1.1899	.5797	-.1886	+9.1837	.9949
12	σ Leonis	4	+51	-20	18 26.8	- 3 18 17	+0.2550	.5790	-.1909	+9.0702	.9970
13	B.A.C. 3996	6	-48	-84	6 28.2	+ 8 17 1	-1.2656	.5766	-.1982	+9.0139	.9977
13	b Virginis	6	- 1	-82	11 8.8	-11 12 24	-0.6645	.5760	-.2001	+9.8838	.9987
13	10 Virginis	6	+49	-22	15 21.6	- 7 8 39	+0.2369	.5754	-.2016	+8.6630	.9995
16	ε ¹ Libræ	6	+59	-11	15 25.3	- 9 37 29	+0.4479	.5704	-.1669	+9.2943	.9914
16	ε ² Libræ	6	+19	-49	16 28.5	- 8 36 25	-0.2224	.5702	-.1656	+9.2757	.9921
16	18 Libræ, pr.	6½	- 4	-83	17 25.5	- 7 41 29	-0.6498	.5702	-.1645	+9.2651	.9925
17	B.A.C. 5070	6	-33	-90	4 23.3	+ 2 53 20	-1.0649	.5702	-.1506	+9.3141	.9906
17	γ Libræ	4½	+76	+ 5	9 28.0	+ 7 47 21	+0.7183	.5698	-.1435	+9.3940	.9862
17	γ Libræ	6	+75	+35	13 13.2	+11 24 37	+1.1262	.5696	-.1384	+9.4200	.9844
17	48 Libræ	4½	-40	-90	19 27.8	- 6 33 56	-1.1143	.5694	-.1287	+9.3805	.9871
17	49 Libræ	5½	+74	+33	20 23.9	- 5 39 48	+1.1033	.5694	-.1273	+9.4440	.9825
18	φ Ophiuchi	5	+10	-53	9 57.1	+ 7 24 57	-0.2875	.5685	-.1057	+9.4487	.9821
18	24 Scorpil	5	+53	- 9	14 32.1	+11 50 21	+0.4671	.5681	-.0978	+9.4777	.9795
18	B.A.C. 5695	6	-40	-90	20 57.1	- 5 58 1	-1.0678	.5670	-.0869	+9.4556	.9815
18	29 Ophiuchi	6	+72	+20	23 29.5	- 3 30 55	+0.9322	.5668	-.0823	+9.5057	.9765
19	B.A.C. 5771	6½	-12	-82	2 21.5	- 0 44 52	-0.6242	.5665	-.0777	+9.4765	.9796
19	B.A.C. 5839	6½	-24	-90	7 32.1	+ 4 14 55	-0.8104	.5656	-.0681	+9.4809	.9791
19	B.A.C. 6060	6½	- 5	-65	23 38.1	- 4 12 26	-0.4443	.5626	-.0391	+9.5076	.9762
20	B.A.C. 6081	6½	+70	+41	1 26.2	- 2 28 2	+1.1548	.5623	-.0357	+9.5408	.9721
20	21 Sagittarii	5	+70	+43	12 54.4	+ 8 36 46	+1.1703	.5591	-.0152	+9.5465	.9713
20	B.A.C. 6287	6	-29	-90	15 9.5	+10 47 17	-0.8046	.5589	-.0113	+9.5083	.9762
20	B.A.C. 6292	6	-18	-82	15 40.6	+11 17 21	-0.6146	.5587	-.0102	+9.5124	.9757
20	B.A.C. 6294	6	-56	-90	15 44.2	+11 20 48	-1.1548	.5586	-.0101	+9.5012	.9770
21	29 Sagittarii	6	+70	+23	0 2.3	- 4 37 55	+0.9687	.5564	+.0045	+9.5437	.9716
21	B.A.C. 6536	6	+18	-35	8 39.9	+ 3 42 29	+0.0120	0.5537	+.0198	+9.5233	9.9744

ELEMENTS FOR FACILITATING THE CALCULATION OF ECLIPSATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1868.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Wash- ington Mean Time of d.	At Washington Mean Time of Conjunction.					
			North- ern.	South- ern.		H	Y	p'	q'	Log sin D	Log cos D
Oct. 21	d Sagittarii	5	+ 6	-49	13 1.7	+ 7 55 37	-0.2235	0.5525	+0.0271	-9.5166	9.9752
	e Sagittarii	5½	-31	-90	15 0.3	+ 9 50 18	-0.8600	.5518	+0.0305	-9.5026	.9768
	B.A.C. 6658	6	-19	-90	17 56.0	-11 19 49	-0.6842	.5508	+0.0355	-9.5042	.9766
	f Sagittarii	5	+70	+64	2 31.7	- 3 0 55	+1.2729	.5479	+0.0498	-9.5355	.9728
	57 Sagittarii	5½	+63	+ 1	5 18.6	- 0 19 27	+0.6347	.5470	+0.0539	-9.5208	.9747
	π Capricor	5	+72	+24	22 13.0	- 7 57 34	+0.9838	.5415	+0.0800	-9.5046	.9766
	ρ Capricor, pr.	5	+63	- 1	22 58.4	- 7 13 32	+0.6107	.5412	+0.0812	-9.4956	.9776
	B.A.C. 7043	6½	+35	-24	23 2.4	- 7 9 43	+0.1974	.5412	+0.0812	-9.4868	.9785
	B.A.C. 7097	6	- 4	-71	2 14.9	- 4 3 16	-0.5159	.5400	+0.0858	-9.4653	.9806
	B.A.C. 7145	6½	-16	-90	4 43.0	- 1 39 50	-0.7254	.5393	+0.0895	-9.4556	.9815
	29 Capricor	6	+31	-31	22 9.3	- 8 45 57	+0.0753	.5339	+0.1129	-9.4327	.9834
	B.A.C. 7487	6½	- 7	-83	7 30.0	+ 0 17 40	-0.6434	.5312	+0.1242	-9.3856	.9868
	42 Capricor	6	+56	-11	11 10.7	+ 3 51 40	+0.4472	.5304	+0.1283	-9.4024	.9857
	44 Capricor	6	+75	+20	11 56.3	+ 4 35 52	+0.9526	.5303	+0.1291	-9.4129	.9849
	μ Capricor	5	+76	+ 5	17 7.6	+ 9 37 49	+0.7185	.5290	+0.1349	-9.3887	.9866
	e Aquarii	6	-30	-90	2 0.2	- 5 45 31	-1.0332	.5271	+0.1441	-9.2983	.9912
	e Aquarii	6	+19	-48	2 2.8	- 5 43 0	-0.2045	.5271	+0.1441	-9.3252	.9901
	σ Aquarii	4	+55	-15	12 22.9	+ 4 18 39	+0.3842	.5254	+0.1539	-9.2939	.9914
	58 Aquarii	6	+79	+ 4	12 54.8	+ 4 49 37	+0.7183	.5253	+0.1542	-9.3024	.9911
	64 Aquarii	6½	+55	-15	16 51.6	+ 8 39 27	+0.3757	.5249	+0.1576	-9.2691	.9924
Oct. 25	λ Aquarii	4	-42	-90	23 48.6	- 8 35 50	-1.1943	.5242	+0.1632	-9.1582	.9954
	81 Aquarii	6	-25	-90	4 23.4	- 4 9 6	-1.0039	.5236	+0.1666	-9.1305	.9960
	h Aquarii	6	+35	-34	6 20.4	- 2 15 30	+0.0245	.5236	+0.1678	-9.1646	.9953
	h Aquarii	7	+39	-30	6 25.5	- 2 10 31	+0.1052	.5236	+0.1681	-9.1677	.9952
	h Aquarii	7	+55	-16	6 43.3	- 1 53 17	+0.3564	.5236	+0.1682	-9.1769	.9950
	h Aquarii	7½	+45	-24	7 24.7	- 1 13 3	+0.2039	.5235	+0.1688	-9.1645	.9953
	φ Aquarii	4½	-22	-90	11 8.1	+ 2 23 45	-0.9739	.5235	+0.1711	-9.0705	.9970
	χ Aquarii	5½	+82	+31	12 26.9	+ 3 40 17	+1.1066	.5235	+0.1721	-9.1666	.9953
	24 Piscium	6½	+ 5	-73	7 18.0	- 2 1 41	-0.5587	.5238	+0.1817	-8.8306	.9990
	27 Piscium	5½	+62	-12	10 18.3	+ 0 53 20	+0.4286	.5240	+0.1829	-8.8733	.9988
	29 Piscium	5½	+50	-22	12 27.7	+ 3 0 0	+0.2479	.5244	+0.1837	-8.8164	.9991
	10 Ceti	6	- 4	-90	0 48.9	- 9 1 37	-0.7128	.5261	+0.1871	-8.1318	0.0000
	14 Ceti	6½	+81	- 1	5 25.3	- 4 33 22	+0.6416	.5271	+0.1879	-8.3306	.9999
	15 Ceti	6	+89	+ 8	6 13.4	- 3 46 37	+0.7901	.5271	+0.1879	-8.3300	.9999
	29 Ceti	6½	+90	+24	22 2.0	+11 33 39	+1.0188	.5312	+0.1883	+8.3581	.9999
	33 Ceti	6	+90	+ 8	23 20.6	-11 10 4	+0.7885	.5314	+0.1881	+8.4842	.9998
	35 Ceti	6½	+90	+18	0 20.8	-10 11 46	+0.9436	.5319	+0.1881	+8.4918	.9998
	γ Piscium	6	+48	-24	3 0.3	- 7 37 5	+0.2059	.5327	+0.1877	+8.7076	.9994
	B.A.C. 408	6½	+ 6	-71	5 28.6	- 5 13 16	-0.5474	.5336	+0.1872	+8.8491	.9989
	ν Piscium	4½	+58	-15	14 50.2	+ 3 51 16	+0.3653	.5368	+0.1847	+8.9246	.9985
Nov. 1	64 Ceti	6½	+18	-53	5 32.3	- 5 54 5	-0.3174	.5427	+0.1781	+9.1411	.9958
	ξ Ceti	4½	+10	-63	6 19.5	- 5 8 19	-0.4710	.5430	+0.1777	+9.1558	.9955
	B.A.C. 741	6	+12	-41	11 52.5	+ 0 14 5	-0.4410	.5458	+0.1743	+9.2000	.9945
	B.A.C. 755	6½	-36	-80	12 56.9	+ 1 16 28	-1.1617	.5460	+0.1735	+9.2384	.9934
	ξ Ceti	4	+90	+42	13 39.0	+ 1 57 15	+1.1962	.5464	+0.1730	+9.1365	.9959
	B.A.C. 830	6	+30	-38	20 27.4	+ 8 32 31	-0.0989	.5497	+0.1678	+9.2473	.9931
	μ Ceti	4	+90	+ 9	21 36.7	+ 9 39 33	+0.7532	.5502	+0.1668	+9.2202	.9939
	B.A.C. 987	6½	+13	-56	9 57.2	- 2 24 16	-0.4209	.5562	+0.1554	+9.3370	.9895
	γ Tauri	4	+90	+28	18 54.5	+ 6 15 4	+0.9938	.5608	+0.1454	+9.3348	.9896
	Wei. III. 1085	8½	+90	+13	9 50.4	- 3 19 44	+0.7321	.5606	+0.1258	+9.4034	.9856
	Wei. IV. 24	9	+90	+21	12 41.6	- 0 34 30	+0.8461	.5698	+0.1216	+9.4099	.9852
	Lal. 7753	7½	+42	-21	12 46.8	- 0 29 33	+0.1139	.5698	+0.1215	+9.4297	.9837
	B.A.C. 1281	7	+ 1	-67	12 49.6	- 0 26 50	-0.6131	.5699	+0.1214	+9.4483	.9822
	Rumk. 1103	7	+66	- 2	12 53.8	- 0 22 49	+0.4611	.5699	+0.1213	+9.4209	.9844
	Rumk. 1108	9	+90	+55	13 21.9	+ 0 4 20	+1.2379	.5702	+0.1206	+9.4013	.9857

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF
PLANETS AND STARS BY THE MOON, FOR THE YEAR 1868.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of ϕ .	At Washington Mean Time of Conjunction.					
			North-ern.	South-ern.		<i>H</i>	<i>Y</i>	<i>p'</i>	<i>q'</i>	Log sin <i>D</i>	Log cos <i>D</i>
Nov. 1	Rumk. 1110		-44	-73	h m	h m s	-1.2001	0.5703	+1.206	+9.4644	9.9807
	48 Tauri	6	+90	+26	13 27.1	+ 0 9 20	+0.9270	.5708	+1.184	+9.4149	.9848
	Rumk. 1136	6	+43	-20	14 55.1	+ 1 34 18	+0.1256	.5711	+1.176	+9.4373	.9831
	γ Tauri	4	+90	+24	15 21.9	+ 2 0 8	+0.8829	.5717	+1.157	+9.4216	.9843
1	55 Tauri	7	+33	-29	16 40.6	+ 3 16 2	+0.0486	.5717	+1.156	+9.4457	.9824
1	Rumk. 1161		-31	-73	16 42.6	+ 3 17 59	-1.0775	.5720	+1.145	+9.4723	.9800
1	Rumk. 1163	8	+21	-42	17 21.8	+ 3 55 49	-0.2671	.5720	+1.144	+9.4531	.9817
1	δ Tauri	4	-22	-73	17 25.2	+ 3 59 4	-0.9723	.5723	+1.136	+9.4716	.9800
1	63 Tauri	6	+27	-35	18 0.5	+ 4 33 5	-0.1507	.5724	+1.132	+9.4525	.9818
1	B.A.C. 1351	6½	+36	-26	18 14.2	+ 4 46 19	+0.0070	.5725	+1.131	+9.4487	.9821
1	δ Tauri	6	-11	-73	18 15.7	+ 4 47 48	-0.8156	.5726	+1.128	+9.4693	.9803
1	Lal. 8249	7½	+11	-53	18 31.0	+ 5 2 32	-0.4401	.5727	+1.126	+9.4603	.9811
1	Lal. 8256	8	+24	-38	18 38.4	+ 5 9 42	-0.2152	.5727	+1.125	+9.4554	.9816
1	δ Tauri	5	-53	-73	18 41.1	+ 5 12 18	-1.2581	.5729	+1.118	+9.4811	.9791
1	70 Tauri	7	+90	+21	19 6.8	+ 5 37 7	+0.8268	.5730	+1.116	+9.4306	.9836
1	Lal. 8311	8	+90	+64	19 13.0	+ 5 43 2	+1.2812	.5731	+1.113	+9.4193	.9845
1	Rumk. 1188	6½	+90	+65	19 25.6	+ 5 55 23	+1.2826	.5731	+1.113	+9.4192	.9845
1	Rumk. 1189		+31	-31	19 25.8	+ 5 55 23	-0.0923	.5731	+1.112	+9.4547	.9816
1	71 Tauri	6	+90	+51	19 32.1	+ 6 1 31	+1.1967	.5731	+1.111	+9.4218	.9843
1	Rumk. 1192		+13	-50	19 32.2	+ 6 1 38	-0.4004	.5731	+1.110	+9.4623	.9809
1	Rumk. 1200		+90	+65	19 35.2	+ 6 4 26	+1.2826	.5734	+1.102	+9.4212	.9843
1	Rumk. 1203		+76	+ 6	20 4.9	+ 6 33 5	+0.5733	.5736	+1.097	+9.4405	.9828
1	75 Tauri	6	+71	+ 2	20 23.7	+ 6 51 16	+0.5181	.5736	+1.097	+9.4420	.9827
1	δ Tauri	4½	+90	+28	20 26.4	+ 6 53 50	+0.9367	.5737	+1.096	+9.4314	.9836
1	δ Tauri	4½	+90	+35	20 29.9	+ 6 57 16	+1.0363	.5737	+1.095	+9.4290	.9837
1	Rumk. 1210		+90	+16	20 32.4	+ 6 59 40	+0.7489	.5738	+1.093	+9.4368	.9831
1	Rumk. 1212	6	- 3	-71	20 40.5	+ 7 7 27	-0.6834	.5738	+1.091	+9.4721	.9800
1	Rumk. 1214		-25	-73	20 47.8	+ 7 14 31	-1.0079	.5739	+1.090	+9.4798	.9792
1	Rumk. 1215	7	-28	-73	20 51.6	+ 7 18 9	-1.0387	.5739	+1.090	+9.4806	.9792
1	B.A.C. 1391	5	+90	+18	20 52.2	+ 7 18 44	+0.7822	.5741	+1.083	+9.4378	.9830
1	B.A.C. 1394	7	+90	+21	21 21.4	+ 7 46 53	+0.8343	.5742	+1.081	+9.4368	.9831
1	Rumk. 1227	7	+90	+53	21 27.3	+ 7 52 36	+1.2128	.5742	+1.077	+9.4277	.9838
1	85 Tauri	6	+90	+51	21 42.9	+ 8 7 38	+1.1973	.5743	+1.073	+9.4287	.9838
1	Rumk. 1232		+64	- 2	21 55.8	+ 8 20 4	+0.4388	.5744	+1.070	+9.4486	.9821
1	Rumk. 1233		-15	-73	22 8.3	+ 8 32 7	-0.8662	.5744	+1.068	+9.4800	.9792
1	Rumk. 1235		+90	+39	22 14.5	+ 8 38 6	+1.0772	.5744	+1.067	+9.4330	.9834
1	B.A.C. 1406	7	+90	+18	22 20.7	+ 8 44 6	+0.7807	.5746	+1.061	+9.4415	.9827
1	Rumk. 1238	10	+82	+19	22 41.6	+ 9 4 18	+0.6217	.5747	+1.055	+9.4464	.9823
1	Lal. 8599	9	- 2	-69	23 2.9	+ 9 24 47	-0.6647	.5748	+1.054	+9.4775	.9795
1	Lal. 8610	8	+44	-18	23 7.1	+ 9 28 49	+0.1318	.5748	+1.052	+9.4590	.9812
1	Lal. 8613	8	+31	-30	23 15.5	+ 9 36 56	-0.0765	.5748	+1.051	+9.4641	.9808
1	α Tauri	1	+89	+12	23 16.8	+ 9 38 14	+0.6775	.5750	+1.044	+9.4467	.9823
2	89 Tauri	7	+90	+63	23 40.5	+10 1 5	+1.2706	.5754	+1.028	+9.4341	.9833
2	Rumk. 1241		+90	+22	23 37.9	+10 56 25	+0.8346	.5757	+1.016	+9.4471	.9823
2	Rumk. 1243	8	+90	+24	1 23.6	+11 40 29	+0.8636	.5760	+1.012	+9.4470	.9822
2	Rumk. 1246	7	+34	-26	1 37.0	+11 53 22	-0.0264	.5762	+1.004	+9.4697	.9802
2	Rumk. 1247		+90	+14	2 5.2	-11 39 28	+0.7083	.5762	+1.004	+9.4520	.9818
2	Rumk. 1254		+90	+17	2 5.5	-11 39 8	+0.7593	.5763	+0.999	+9.4515	.9819
2	Lal. 8852	9½	+44	-17	2 21.9	-11 23 19	+0.1341	.5765	+0.993	+9.4674	.9804
2	B.A.C. 1468	6	-48	-72	2 42.2	-11 3 47	-1.2207	.5770	+0.970	+9.5013	.9770
2	Rumk. 1276		-19	-72	4 5.3	- 9 43 42	-0.9292	.5772	+0.963	+9.4957	.9776
2	B.A.C. 1478	7½	-35	-72	4 27.5	- 9 22 17	-1.1146	.5775	+0.952	+9.5012	.9770
2	Rumk. 1283	7	+90	+39	5 7.2	- 8 43 59	+1.0573	.5775	+0.951	+9.4508	.9819
2	ι Tauri	5½	-37	-72	5 9.9	- 8 41 26	-1.1361	.5780	+0.932	+9.5040	.9767
2	Rumk. 1299	7½	+40	-20	6 16.2	- 7 37 31	+0.0788	.5781	+0.928	+9.4773	9.9795

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1868.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of δ .	At Washington Mean Time of Conjunction.								
			North- ern.	South- ern.		H	Y	p'	q'	Log sin D	Log cos D			
Nov.					h m s	h m s								
2	Rumk. 1300		+44	-16	6 32.7	- 7 21 36	+0.1373	0.5781	+0.0927	+9.4760	9.9796			
2	Rumk. 1301	6	-34	-72	6 33.6	- 7 20 43	-1.1084	.5781	+0.0927	+9.5040	.9767			
2	Rumk. 1302	7	-26	-72	6 34.2	- 7 20 10	-1.0160	.5781	+0.0926	+9.5020	.9769			
2	B.A.C. 1526	6	+90	+23	8 52.6	- 5 6 43	+0.8341	.5792	+0.0887	+9.4645	.9807			
2	m Tauri	5½	+14	-46	13 5.5	- 1 3 5	-0.3861	.5808	+0.0812	+9.5007	.9770			
2	B.A.C. 1651	6½	-47	-71	18 47.5	+ 4 26 26	-1.2073	.5830	+0.0704	+9.5272	.9739			
2	115 Tauri	5½	+90	+23	21 26.9	+ 6 59 52	+0.8674	.5840	+0.0652	+9.4864	.9786			
2	119 Tauri	5½	+57	- 3	23 32.7	+ 9 1 4	+0.3310	.5845	+0.0612	+9.5013	.9770			
3	120 Tauri	6	+63	+ 2	0 5.8	+ 9 32 54	+0.4159	.5848	+0.0603	+9.5002	.9771			
3	χ^1 Orionis	4½	-25	-70	8 44.3	- 6 7 54	-0.9993	.5873	+0.0430	+9.5392	.9723			
3	χ^2 Orionis	6	+10	-46	8 58.4	- 5 54 21	-0.4454	.5875	+0.0426	+9.5282	.9737			
3	χ^3 Orionis	5	+20	-34	12 29.6	- 2 31 8	-0.2748	.5883	+0.0352	+9.5275	.9738			
3	χ^4 Orionis	5	- 7	-70	12 40.4	- 2 20 45	-0.7311	.5883	+0.0349	+9.5369	.9726			
3	68 Orionis	6	+19	-35	16 1.2	+ 0 52 32	-0.2938	.5891	+0.0282	+9.5302	.9735			
3	71 Orionis	5½	+60	+ 3	17 12.2	+ 2 0 51	+0.3750	.5892	+0.0258	+9.5169	.9751			
3	15 Geminor	8	-52	-69	22 27.6	+ 7 4 16	-1.2274	.5903	+0.0144	+9.5515	.9706			
3	15 Geminor	6	-53	-69	22 28.0	+ 7 4 41	-1.2357	.5903	+0.0144	+9.5517	.9705			
3	16 Geminor	6	-20	-70	22 32.6	+ 7 9 5	-0.9305	.5903	+0.0142	+9.5457	.9714			
3	ν Geminor	4½	- 1	-60	22 57.9	+ 7 33 27	-0.6374	.5903	+0.0136	+9.5400	.9722			
4	ζ Gemin. tr.	4	-39	-69	13 19.0	- 2 38 18	-1.1389	.5903	-0.0167	+9.5495	.9708			
4	56 Geminor	5½	-55	-70	20 35.8	+ 4 21 51	-1.2445	.5917	-0.0326	+9.5481	.9710			
4	B.A.C. 2432	6½	+90	+37	21 6.4	+ 4 51 16	+0.9532	.5917	-0.0334	+9.5019	.9769			
5	f Geminor	6	+90	+64	3 48.1	+11 17 41	+1.2437	.5914	-0.0476	+9.4893	.9783			
5	g Geminor	5½	+50	- 7	6 30.2	-10 6 27	+0.2325	.5909	-0.0534	+9.5088	.9761			
5	3 Cancri	6	+90	+42	12 31.3	- 4 19 5	+1.0590	.5901	-0.0657	+9.4821	.9790			
5	B.A.C. 2683	6	0	-63	14 7.0	- 2 47 1	-0.6227	.5901	-0.0686	+9.5172	.9751			
5	B.A.C. 2731	6½	+90	+42	16 18.5	- 0 40 32	+1.0671	.5898	-0.0729	+9.4756	.9797			
5	ϵ^1 Cancri	4½	+58	- 3	17 11.6	+ 0 10 32	+0.3479	.5897	-0.0747	+9.4909	.9781			
5	ϵ^2 Cancri	7½	+58	- 3	17 11.7	+ 0 10 39	+0.3505	.5897	-0.0747	+9.4908	.9781			
5	δ^1 Cancri	6	- 7	-71	21 46.3	+ 4 34 52	-0.7382	.5887	-0.0839	+9.5071	.9763			
5	δ^2 Cancri	6	+67	+ 2	22 49.3	+ 5 35 29	+0.4693	.5886	-0.0860	+9.4775	.9795			
6	δ Cancri	6	-12	-72	1 10.2	+ 7 51 4	-0.8153	.5882	-0.0903	+9.5023	.9769			
6	54 Cancri	6½	+90	+45	9 15.9	- 8 21 31	+1.1347	.5863	-0.1053	+9.4359	.9832			
6	δ^4 Cancri	6	+90	+24	11 48.5	- 5 54 43	+0.8676	.5855	-0.1101	+9.4356	.9832			
6	δ^5 Cancri	6	+78	+ 7	11 58.6	- 5 44 52	+0.5895	.5855	-0.1103	+9.4425	.9827			
6	π^1 Cancri	6½	+64	- 3	18 9.8	+ 0 12 29	+0.4408	.5840	-0.1210	+9.4275	.9839			
6	π^2 Cancri	6	+57	- 9	19 21.8	+ 1 21 48	+0.3334	.5834	-0.1229	+9.4265	.9839			
7	7 Leonis	6½	+21	-44	4 3.9	+ 9 44 32	-0.2705	.5808	-0.1370	+9.4119	.9850			
7	ν Leonis	5	+52	-15	13 34.7	- 5 5 30	+0.2736	.5780	-0.1511	+9.3544	.9886			
7	α Leonis	1½	+40	-26	17 56.4	- 0 53 18	+0.0694	.5768	-0.1569	+9.3390	.9894			
8	45 Leonis	6	+90	+21	2 14.8	+ 7 7 8	+0.9241	.5745	-0.1671	+9.2578	.9928			
8	ϵ Leonis	4	+90	+26	4 29.2	+ 9 16 43	+1.0007	.5738	-0.1698	+9.2389	.9934			
8	χ Leonis	5	+66	- 8	18 34.2	- 1 8 21	+0.4644	.5702	-0.1837	+9.1460	.9957			
8	B.A.C. 3337	6½	-20	-81	22 25.9	+ 2 35 3	-0.9929	.5694	-0.1869	+9.1836	.9949			
9	σ Leonis	4	+64	-10	1 39.4	+ 5 41 53	+0.4529	.5686	-0.1892	+9.0701	.9970			
9	B.A.C. 3996	6	-31	-84	14 3.9	- 6 19 36	-1.1107	.5665	-0.1966	+9.0138	.9977			
9	b Virginis	6	+ 8	-68	18 53.5	- 1 40 2	-0.5110	.5657	-0.1987	+8.8837	.9987			
9	10 Virginis	6	+60	-14	23 14.3	+ 2 31 44	+0.3938	.5652	-0.2001	+8.6627	9.9995			
10	γ Virginis, pr.	2½	+90	+16	13 36.1	- 7 36 7	+0.9053	.5640	-0.2023	-8.1035	0.0000			
10	B.A.C. 4277	6	+90	+12	14 26.6	- 6 47 22	+0.8588	.5640	-0.2023	-8.1708	0.0000			
10	46 Virginis	6½	+88	+34	22 4.1	+ 0 34 26	+1.1540	.5636	-0.2017	-8.6663	9.9995			
10	48 Virginis	6	+87	+34	23 33.2	+ 2 0 30	+1.1540	.5639	-0.2014	-8.7119	.9994			
11	65 Virginis	6	+86	+ 3	8 16.2	+10 25 33	+0.7104	.5639	-0.1991	-8.8682	.9988			
11	66 Virginis	6	+86	+12	8 48.8	+10 57 3	+0.8464	.5639	-0.1988	-8.8920	.9987			
11	β Virginis	5	+85	+53	12 9.2	- 9 49 29	+1.3059	0.5642	-0.1976	-8.9874	9.9979			

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF
PLANETS AND STARS BY THE MOON, FOR THE YEAR 1868.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Wash- ington Mean Time of C.	At Washington Mean Time of Conjunction.					
			North- ern.	South- ern.		H	I	p'	q'	Log sin D	Log cos D
Nov. 11	80 Virginis	6	+42	-29	13 45.0	- 8 16 57	+0.1255	0.5643	-.1968	-8.9157	9.9965
12	94 Virginis	6	+82	+28	3 31.2	+ 5 0 51	+1.0787	.5652	-.1885	-9.1574	.9955
16	B.A.C. 6060	6½	-17	-87	8 49.8	+ 6 47 17	-0.6519	.5678	-.0413	-9.5076	.9762
16	B.A.C. 6081	6½	+70	+21	10 36.3	+ 8 30 5	+0.9369	.5671	-.0378	-9.5408	.9721
16	15 Sagittarii	5	+69	+46	17 22.0	- 8 58 20	+1.1943	.5657	-.0251	-9.5496	.9708
16	16 Sagittarii	6	+70	+13	17 22.7	- 8 57 36	+0.8287	.5657	-.0250	-9.5427	.9718
16	21 Sagittarii	5	+70	+20	21 54.2	- 4 35 32	+0.9339	.5648	-.0169	-9.5465	.9713
17	B.A.C. 6287	6	-45	-90	0 7.2	- 2 27 8	-1.0351	.5640	-.0129	-9.5083	.9762
17	B.A.C. 6292	6	-32	-90	0 37.8	- 1 57 32	-0.8472	.5640	-.0117	-9.5124	.9757
17	29 Sagittarii	6	+68	+ 6	8 51.5	+ 5 59 13	+0.7161	.5617	+0.0034	-9.5437	.9717
17	ξ¹ Sagittarii	6	+69	+37	12 19.8	+ 9 20 26	+1.1223	.5607	+0.0095	-9.5508	.9707
17	B.A.C. 6536	6	+ 3	-51	17 20.9	- 9 48 37	-0.2471	.5590	+0.0185	-9.5233	.9744
17	d Sagittarii	5	- 9	-69	21 38.7	- 5 39 36	-0.4869	.5574	+0.0265	-9.5166	.9752
17	e¹ Sagittarii	5½	-51	-90	23 35.5	- 3 46 43	-1.1225	.5567	+0.0299	-9.5025	.9769
18	B.A.C. 6658	6	-36	-90	2 28.4	- 0 59 32	-0.9513	.5555	+0.0351	-9.5042	.9766
18	f Sagittarii	5	+70	+24	10 56.6	+ 7 11 47	+0.9879	.5523	+0.0492	-9.5355	.9728
19	π Capricor.	5	+69	+ 3	6 22.9	+ 2 0 13	+0.6844	.5444	+0.0803	-9.5046	.9766
19	ρ Capricor. pr.	5	+41	-18	7 7.9	+ 2 43 45	+0.3120	.5442	+0.0811	-9.4956	.9776
19	B.A.C. 7043	6½	+18	-42	7 11.8	+ 2 47 31	-0.0999	.5442	+0.0812	-9.4868	.9785
19	σ Capricor. pr.	6	+71	+45	7 36.8	+ 3 11 42	+1.1965	.5440	+0.0820	-9.5129	.9756
19	B.A.C. 7097	6	-22	-90	10 22.3	+ 5 51 58	-0.8126	.5427	+0.0861	-9.4653	.9806
19	v Capricor.	5½	+72	+40	12 31.9	+ 7 57 24	+1.1614	.5420	+0.0892	-9.5037	.9767
19	B.A.C. 7145	6½	-36	-90	12 49.0	+ 8 13 56	-1.0233	.5420	+0.0896	-9.4556	.9815
20	29 Capricor.	6	+14	-50	6 7.3	+ 0 59 51	-0.2321	.5352	+0.1129	-9.4327	.9834
20	B.A.C. 7487	6½	-26	-90	15 25.6	+10 0 56	-0.9510	.5317	+0.1245	-9.3856	.9868
20	42 Capricor.	6	+36	-28	19 5.7	-10 25 38	+0.1394	.5304	+0.1285	-9.4024	.9857
20	44 Capricor.	6	+71	0	19 51.2	- 9 41 31	+0.6434	.5303	+0.1294	-9.4129	.9849
20	45 Capricor.	6	+75	+32	20 19.5	- 9 14 0	+1.0952	.5300	+0.1298	-9.4228	.9842
21	μ Capricor.	5	+54	-13	1 2.0	- 4 40 5	+0.4100	.5284	+0.1351	-9.3887	.9866
21	e² Aquarii	6	+ 3	-70	9 57.2	+ 3 59 11	-0.5101	.5259	+0.1443	-9.3252	.9901
21	σ Aquarii	4	+36	-31	20 18.7	- 9 57 44	+0.0833	.5234	+0.1537	-9.2939	.9914
21	58 Aquarii	6	+57	-13	20 50.8	- 9 26 36	+0.4179	.5232	+0.1543	-9.3025	.9911
22	64 Aquarii	6½	+37	-31	0 48.5	- 5 35 53	+0.0776	.5225	+0.1577	-9.2691	.9924
22	h¹ Aquarii	6	-55	-90	12 24.1	+ 5 39 23	-1.2945	.5206	+0.1667	-9.1306	.9960
22	h¹ Aquarii	6	+19	-51	14 21.9	+ 7 33 46	-0.2629	.5205	+0.1681	-9.1646	.9953
22	h² Aquarii	7	+24	-46	14 27.0	+ 7 38 46	-0.1820	.5205	+0.1681	-9.1677	.9952
22	h³ Aquarii	7	+37	-32	14 44.7	+ 7 55 55	+0.0692	.5205	+0.1683	-9.1769	.9950
22	h⁴ Aquarii	7½	+29	-41	15 26.6	+ 8 36 38	-0.0822	.5202	+0.1688	-9.1646	.9953
22	φ Aquarii	4½	-48	-90	19 11.6	-11 44 57	-1.2578	.5200	+0.1711	-9.0705	.9970
22	χ Aquarii	5½	+82	+11	20 31.0	-10 27 50	+0.8270	.5200	+0.1720	-9.1667	.9953
23	24 Piscium	6½	-10	-90	15 31.7	+ 7 59 54	-0.8166	.5199	+0.1819	-8.8307	.9990
23	27 Piscium	5½	+45	-26	18 33.7	+10 56 33	+0.1772	.5201	+0.1831	-8.8733	.9988
23	29 Piscium	5½	+30	-41	20 12.9	-11 27 4	-0.0969	.5202	+0.1836	-8.8164	.9991
24	B.A.C. 81	6½	+87	+41	8 6.4	+ 0 5 41	+1.2179	.5218	+0.1871	-8.7106	.9994
24	10 Ceti	6	-18	-90	9 12.5	+ 1 9 51	-0.9410	.5220	+0.1874	-8.1319	0.0000
24	14 Ceti	6½	+62	-13	13 51.5	+ 5 40 40	+0.4244	.5230	+0.1862	-8.3306	.9999
24	15 Ceti	6	+74	- 4	14 40.1	+ 6 27 51	+0.5749	.5232	+0.1884	-8.3302	.9999
24	26 Ceti	6½	+90	+32	4 28.1	- 4 8 31	+1.1290	.5270	+0.1892	-8.0630	0.0000
25	29 Ceti	6½	+90	+11	6 36.3	- 2 4 12	+0.8354	.5277	+0.1891	-8.3579	.9999
25	33 Ceti	6	+78	- 2	7 55.5	- 0 47 22	+0.6088	.5281	+0.1890	+8.4840	.9998
25	35 Ceti	6½	+90	+ 7	8 56.0	+ 0 11 21	+0.7651	.5284	+0.1889	+8.4917	.9998
25	f Piscium	6	+38	-34	11 36.5	+ 2 47 3	+0.0335	.5294	+0.1887	+8.7076	.9994
25	B.A.C. 408	6½	- 3	-86	14 5.8	+ 5 11 48	-0.7138	.5304	+0.1883	+8.8491	.9989
25	v Piscium	4½	+49	-23	23 30.1	- 9 40 56	+0.2207	.5344	+0.1862	+8.9246	.9985
26	64 Ceti	6½	+13	-60	14 14.0	+ 4 35 32	-0.4243	0.5414	+0.1802	+9.1411	.9958

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1868.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of Conjunction.	At Washington Mean Time of Conjunction.						
			North-ern.	South-ern.		H	Y	p'	q'	Log sin D	Log cos D	
Nov. 26	ξ ¹ Ceti	4½	+ 4	-72	15 1.3	+ 5 21 19	-0.5753	0.5419	+0.1798	+9.1558	9.9865	
26	B.A.C. 741	6½	+ 7	-67	20 34.0	+10 43 26	-0.5309	.5450	+0.1764	+9.1999	.9945	
26	B.A.C. 755	6	-45	-80	21 38.3	+11 45 42	-1.2462	.5456	+0.1757	+9.2384	.9934	
26	ξ ² Ceti	4	+90	+33	22 20.3	-11 33 36	+1.1056	.5458	+0.1754	+9.1365	.9959	
27	B.A.C. 830	6	+27	-40	5 7.4	-4 59 37	-0.1673	.5498	+0.1705	+9.2473	.9931	
27	μ Ceti	4	+88	+ 5	6 16.4	-3 52 54	+0.6842	.5503	+0.1696	+9.2202	.9939	
27	B.A.C. 987	6½	+11	-59	18 32.1	+7 58 28	-0.4517	.5580	+0.1583	+9.3370	.9895	
28	f Tauri	4	+90	+27	3 24.1	-7 27 31	+0.9775	.5632	+0.1486	+9.3348	.9896	
28	Wei. III. 1085	8½	+90	+14	18 7.8	+6 45 25	+0.7551	.5729	+0.1295	+9.4033	.9856	
28	Wei. IV. 24	9	+90	+22	20 56.2	+9 27 51	+0.8752	.5745	+0.1255	+9.4099	.9852	
28	Lal. 7753	7½	+45	-19	21 1.2	+9 32 43	+0.1494	.5746	+0.1254	+9.4297	.9837	
28	B.A.C. 1281	7	+ 4	-63	21 4.0	+9 35 22	-0.5712	.5746	+0.1253	+9.4483	.9822	
28	Rumk. 1103	7	-69	0	21 8.1	+9 39 19	+0.4935	.5749	+0.1244	+9.4209	.9844	
28	Rumk. 1108	9	+90	+59	21 35.8	+10 6 2	+1.2656	.5749	+0.1244	+9.4013	.9857	
28	Rumk. 1110	9	-37	-73	21 40.9	+10 10 56	-1.1516	.5749	+0.1243	+9.4644	.9807	
28	48 Tauri	6	+90	+28	23 7.4	+11 34 20	+0.9605	.5758	+0.1219	+9.4149	.9848	
28	Rumk. 1136	6	+46	-18	23 33.7	+11 59 44	+0.1676	.5761	+0.1213	+9.4373	.9831	
29	γ Tauri	4	+90	+26	0 51.0	-10 45 47	+0.9213	.5769	+0.1193	+9.4216	.9843	
29	55 Tauri	7	+36	-27	0 53.0	-10 43 51	-0.0019	.5769	+0.1192	+9.4457	.9824	
29	Rumk. 1161	7	-26	-73	1 31.5	-10 6 44	-1.0195	.5773	+0.1182	+9.4724	.9800	
29	Rumk. 1163	8	+24	-39	1 34.8	-10 3 33	-0.2167	.5773	+0.1181	+9.4531	.9817	
29	δ ¹ Tauri	4	-18	-73	2 9.4	-9 30 10	-0.9141	.5777	+0.1172	+9.4716	.9800	
29	63 Tauri	6	+30	-32	2 22.9	-9 17 13	-0.0993	.5779	+0.1168	+9.4525	.9818	
29	B.A.C. 1351	6½	+39	-23	2 24.4	-9 15 44	+0.0569	.5779	+0.1168	+9.4487	.9821	
29	δ ² Tauri	6	- 7	-73	2 39.4	-9 1 16	-0.7575	.5780	+0.1164	+9.4693	.9803	
29	Lal. 8249	7½	+15	-48	2 46.7	-8 54 15	-0.3680	.5781	+0.1162	+9.4603	.9811	
29	Lal. 8256	8	+27	-35	2 49.3	-8 51 44	-0.1621	.5782	+0.1159	+9.4554	.9816	
29	δ ² Tauri	5	-43	-73	3 14.6	-8 27 23	-1.1945	.5784	+0.1154	+9.4811	.9791	
29	70 Tauri	7	+90	+23	3 20.6	-8 21 36	+0.8716	.5785	+0.1153	+9.4306	.9836	
29	Rumk. 1189	7	+34	-25	3 39.4	-8 3 28	-0.0322	.5786	+0.1148	+9.4547	.9816	
29	71 Tauri	6	+90	+56	3 39.5	-8 3 20	+1.2391	.5786	+0.1148	+9.4218	.9843	
29	Rumk. 1192	6	+17	-46	3 42.3	-8 0 36	-0.3433	.5787	+0.1146	+9.4623	.9809	
29	Rumk. 1203	6	+82	+ 8	4 30.0	-7 14 40	+0.6234	.5792	+0.1133	+9.4405	.9828	
29	75 Tauri	6	+76	+ 5	4 32.6	-7 12 10	+0.5687	.5792	+0.1133	+9.4420	.9827	
29	δ ¹ Tauri	4½	+90	+31	4 36.1	-7 8 49	+0.9836	.5792	+0.1133	+9.4314	.9835	
29	δ ² Tauri	4½	+90	+39	4 38.5	-7 6 27	+1.0824	.5792	+0.1192	+9.4290	.9837	
29	Rumk. 1210	6	+90	+19	4 46.4	-6 58 50	+0.7982	.5793	+0.1130	+9.4368	.9831	
29	Rumk. 1212	6	+ 1	-66	4 53.6	-6 51 53	-0.6206	.5793	+0.1128	+9.4721	.9800	
29	Rumk. 1214	7	-20	-73	4 57.4	-6 48 19	-0.9415	.5794	+0.1127	+9.4798	.9792	
29	Rumk. 1215	7	-22	-73	4 57.9	-6 47 46	-0.9723	.5794	+0.1127	+9.4806	.9792	
29	B.A.C. 1391	5	+90	+21	5 26.6	-6 20 9	+0.8327	.5796	+0.1119	+9.4378	.9830	
29	B.A.C. 1394	7	+90	+24	5 32.4	-6 14 35	+0.8843	.5797	+0.1117	+9.4368	.9830	
29	Rumk. 1227	7	+90	+60	5 47.7	-5 59 49	+1.2604	.5798	+0.1113	+9.4277	.9838	
29	85 Tauri	6	+90	+57	6 0.3	-5 47 38	+1.2451	.5799	+0.1110	+9.4285	.9838	
29	Rumk. 1232	6	+69	+ 1	6 12.6	-5 35 49	+0.4943	.5800	+0.1106	+9.4486	.9821	
29	Rumk. 1233	7	-10	-73	6 18.7	-5 29 57	-0.7982	.5801	+0.1105	+9.4800	.9792	
29	Rumk. 1235	7	+90	+43	6 24.7	-5 24 7	+1.1272	.5801	+0.1103	+9.4330	.9834	
29	B.A.C. 1406	7	+90	+21	6 45.3	-5 4 19	+0.8344	.5801	+0.1100	+9.4415	.9827	
29	Rumk. 1238	10	+90	+12	7 7.8	-4 42 36	+0.6808	.5804	+0.1090	+9.4464	.9823	
29	Lal. 8599	9	+ 2	-64	7 10.2	-4 40 18	-0.5962	.5804	+0.1089	+9.4775	.9795	
29	Lal. 8610	8	+47	-15	7 18.5	-4 32 21	+0.1929	.5805	+0.1088	+9.4590	.9812	
29	Lal. 8613	8	+35	-26	7 19.8	-4 31 4	-0.0134	.5805	+0.1088	+9.4641	.9808	
29	α Tauri	1	+90	+15	7 43.0	-4 8 41	+0.7343	.5808	+0.1082	+9.4467	.9823	
29	Rumk. 1241	8	+90	+26	9 24.1	-2 31 19	+0.8947	.5817	+0.1050	+9.4471	.9823	
29	Rumk. 1243	8	+90	+28	9 37.1	-2 18 44	+0.9234	.5818	+0.1041	+9.4470	.9823	

**ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF
PLANETS AND STARS BY THE MOON, FOR THE YEAR 1868.**

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Wash- ington Mean Time of δ.	At Washington Mean Time of Conjunction.							
			North- ern.	South- ern.		H	Y	p'	q'	Log sin D	Log cos D		
						^h ^m ^s	^h ^m ^s						
Nov. 29	Rumk. 1246	7	+39	-23	10 4.8	-1 52 7	+0.0433	0.5821	+1.038	+9.4607	9.9802		
29	Rumk. 1247		+90	+18	10 5.1	-1 51 48	+0.7709	.5821	+1.038	+9.4520	.9818		
29	Rumk. 1254		+90	+21	10 21.2	-1 36 19	+0.8217	.5823	+1.033	+9.4515	.9819		
29	Lal. 8852	9½	+48	-14	10 41.0	-1 17 13	+0.2037	.5824	+1.027	+9.4674	.9804		
29	Rumk. 1269	6½	-45	-72	11 57.6	-0 3 24	-1.2070	.5832	+1.007	+9.5027	.9768		
29	B.A.C. 1468	6	-37	-72	12 2.3	+0 1 8	-1.1342	.5833	+1.006	+9.5013	.9770		
29	Rumk. 1276		-13	-72	12 24.1	+0 22 5	-0.8447	.5835	+1.000	+9.4957	.9776		
29	B.A.C. 1478	7½	-27	-72	13 3.0	+0 59 34	-1.0264	.5838	+0.989	+9.5012	.9770		
29	Rumk. 1283	7	+90	+44	13 5.6	+1 2 3	+1.1236	.5838	+0.987	+9.4508	.9819		
29	i Tauri	5½	-28	-72	14 10.5	+2 4 33	-1.0450	.5844	+0.968	+9.5040	.9767		
29	Rumk. 1299	7½	+45	-16	14 24.3	+2 17 48	+0.1579	.5845	+0.964	+9.4773	.9795		
29	Rumk. 1300		+49	-12	14 26.6	+2 20 5	+0.2160	.5845	+0.964	+9.4760	.9796		
29	Rumk. 1301	6	-26	-72	14 27.5	+2 20 58	-1.0172	.5845	+0.963	+9.5040	.9767		
29	Rumk. 1302	7	-19	-72	14 28.1	+2 21 31	-0.9255	.5845	+0.963	+9.5020	.9769		
29	B.A.C. 1526	6	+90	+28	16 43.5	+4 31 55	+0.9114	.5860	+0.921	+9.4645	.9807		
29	m Tauri	5½	+20	-40	20 50.7	+8 29 53	-0.2865	.5880	+0.845	+9.5007	.9770		
30	B.A.C. 1651	6½	-33	-71	2 24.8	-10 8 41	-1.0857	.5907	+0.736	+9.5272	.9739		
30	115 Tauri	5½	+90	+35	5 0.2	-7 39 6	+0.9725	.5917	+0.687	+9.4863	.9786		
30	119 Tauri	5½	+65	+3	7 3.0	-5 41 0	+0.4466	.5924	+0.646	+9.5013	.9770		
30	120 Tauri	6	+73	+8	7 35.2	-5 10 0	+0.5319	.5929	+0.632	+9.5002	.9771		
30	χ¹ Orionis	4½	-14	-70	16 0.6	+2 55 56	-0.8490	.5958	+0.460	+9.5302	.9723		
30	χ² Orionis	6	+18	-37	16 14.3	+3 9 9	-0.3008	.5959	+0.456	+9.5282	.9737		
30	χ³ Orionis	5	+29	-26	19 39.9	+6 26 50	-0.1247	.5969	+0.379	+9.5275	.9738		
30	χ⁴ Orionis	5	+3	-56	19 50.4	+6 36 55	-0.5756	.5970	+0.376	+9.5369	.9726		
30	68 Orionis	6	+28	-26	23 6.0	-0 15 6	-0.1362	.5977	+0.307	+9.5302	.9735		
Dec. 1	71 Orionis	5½	+73	+11	0 15.1	+10 51 17	+0.5272	.5980	+0.283	+9.5169	.9752		
1	15 Geminor	8	-29	-69	5 22.0	-8 13 46	-1.0462	.5990	+0.166	+9.5515	.9706		
1	15 Geminor	6	-30	-69	5 22.4	-8 13 19	-1.0541	.5990	+0.165	+9.5516	.9705		
1	16 Geminor	6	-8	-70	5 26.9	-8 9 3	-0.7525	.5990	+0.164	+9.5457	.9714		
1	ν Geminor	4½	+10	-45	5 51.5	-7 45 22	-0.4624	.5991	+0.157	+9.5400	.9722		
1	ζ Gemin. tr.	4	-20	-69	19 49.6	+5 39 51	-0.9320	.6002	-0.154	+9.5495	.9708		
2	56 Geminor	5½	-28	-70	2 55.0	-11 31 26	-1.0247	.6002	-0.312	+9.5481	.9710		
2	B.A.C. 2432	6½	+90	+53	3 24.8	-11 2 48	+1.1511	.6000	-0.326	+9.5019	.9769		
2	g Geminor	5½	+66	+5	12 34.7	-2 14 32	+0.4527	.5990	-0.526	+9.5088	.9761		
2	3 Cancri	6	+90	+71	18 27.3	+3 24 19	+1.2300	.5976	-0.650	+9.4820	.9790		
2	B.A.C. 2683	6	+14	-44	20 0.9	+4 54 14	-0.3840	.5975	-0.682	+9.5172	.9751		
2	l¹ Cancri	4½	+78	+10	23 1.4	+7 47 44	+0.5821	.5966	-0.745	+9.4909	.9781		
2	l² Cancri	7½	+78	+10	23 1.5	+7 47 50	+0.5848	.5966	-0.745	+9.4908	.9781		
3	d¹ Cancri	6	+8	-53	3 30.4	-11 53 42	-0.4892	.5952	-0.839	+9.5071	.9763		
3	d² Cancri	6	+90	+16	4 32.0	-10 54 25	+0.7101	.5950	-0.859	+9.4775	.9795		
3	δ Cancri	6	+4	-59	6 50.2	-8 41 37	-0.5616	.5942	-0.904	+9.5022	.9769		
3	δ Cancri	4	-40	-72	12 8.7	-3 35 18	-1.1682	.5926	-1.005	+9.5045	.9766		
3	o¹ Cancri	6	+90	+43	17 19.1	+1 23 16	+1.1215	.5907	-1.100	+9.4356	.9832		
3	o² Cancri	6	+90	+22	17 27.2	+1 31 0	+0.8451	.5905	-1.107	+9.4425	.9827		
3	π¹ Cancri	6½	+90	+12	23 32.9	+7 22 51	+0.7031	.5880	-1.214	+9.4275	.9839		
4	π² Cancri	6	+78	+6	0 43.9	+8 31 13	+0.5947	.5875	-1.234	+9.4265	.9839		
4	ν Leonis	6½	+36	-28	9 20.0	-7 11 59	+0.0021	.5837	-1.372	+9.4119	.9850		
4	γ Leonis	5	+73	0	18 46.6	+1 53 40	+0.5498	.5797	-1.513	+9.3543	.9886		
4	α Leonis	1½	+57	-12	23 7.1	+6 4 41	+0.3474	.5777	-1.570	+9.3389	.9894		
4	34 Leonis	6	-52	-76	0 29.0	+7 23 36	-1.2767	.5769	-1.589	+9.3837	.9869		
5	45 Leonis	6	+90	+45	7 24.6	-9 55 45	+1.2042	.5738	-1.673	+9.2677	.9928		
5	ε Leonis	4	+90	+55	9 39.1	-7 46 5	+1.2812	.5731	-1.697	+9.2388	.9934		
5	ι Leonis	5	-44	-79	16 48.8	+9 8 18	-1.2348	.5699	-1.770	+9.2898	.9916		
5	χ Leonis	5	+90	+8	23 47.8	+5 52 32	+0.7428	.5674	-1.833	+9.1459	.9957		
6	B.A.C. 3337	6½	-5	-81	3 45.9	+9 42 19	-0.7354	0.5660	-1.864	+9.1836	9.9949		

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1868.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of δ .	At Washington Mean Time of Conjunction.					
			North-ern.	South-ern.		H	Y	p'	q'	Log sin D	Log cos D
Dec.	6 α Leonis	4	+90	+6	6 56.8	-11 13 25	+0.7286	0.5651	-1.887	+9.0700	9.9970
	6 B.A.C. 3996	6	-12	-54	19 31.0	+0 54 51	-0.8539	.5610	-1.958	+9.0137	.9977
	7 δ Virginis	6	+22	-50	0 25.3	+5 39 10	-0.2553	.5599	-1.978	+8.8836	.9987
	7 10 Virginis	6	+82	0	4 50.8	+9 55 37	+0.6512	.5589	-1.992	+8.6625	9.9995
	7 γ Virginis, pr.	2½	+90	+34	19 30.6	+0 5 45	+1.1487	.5564	-2.012	-8.1044	0.0000
	7 B.A.C. 4277	6	+90	+30	20 22.2	+0 55 39	+1.1010	.5564	-2.012	-8.1716	0.0000
	8 65 Virginis	6	+86	+16	14 38.2	-5 24 57	+0.9200	.5556	-1.980	-8.8683	9.9988
	8 66 Virginis	6	+86	+26	15 11.7	-4 52 36	+1.0563	.5554	-1.978	-8.8922	.9987
	8 80 Virginis	6	+54	-19	20 15.7	+0 1 14	+0.3178	.5556	-1.958	-8.9158	.9985
	9 94 Virginis	6	+82	+45	10 24.0	-10 18 43	+1.2514	.5565	-1.878	-9.1574	.9955
	10 ξ^1 Libræ	6	+66	-7	8 22.4	+10 55 21	+0.5341	.5598	-1.688	-9.2944	.9914
	10 ξ^2 Libræ	6	+24	-45	9 27.9	+11 58 36	-0.1520	.5598	-1.677	-9.2757	.9921
	10 18 Libræ, pr.	6½	0	-73	10 26.7	-11 4 31	-0.5909	.5599	-1.665	-9.2652	.9925
	10 B.A.C. 5070	6	-33	-90	21 44.7	-0 9 32	-1.0661	.5621	-1.535	-9.3142	.9906
	11 γ Libræ	4½	+76	+4	2 57.2	+4 52 16	+0.7128	.5627	-1.469	-9.3941	.9862
	11 η Libræ	6	+75	+32	6 47.5	+8 34 39	+1.1056	.5636	-1.417	-9.4200	.9844
	11 48 Libræ	4½	-47	-90	13 9.3	-9 16 37	-1.1888	.5647	-1.329	-9.3805	.9871
	11 49 Libræ	5½	+74	+27	14 6.4	-8 21 31	+1.0447	.5647	-1.314	-9.4440	.9825
	12 ϕ Ophiuchi	5	+3	-63	3 49.5	+4 53 15	-0.4233	.5668	-1.100	-9.4487	.9821
	14 29 Sagittarii	6	+53	-3	17 23.9	-7 40 33	+0.5766	.5639	+0.016	-9.5437	.9717
	14 ξ^1 Sagittarii	6	+69	+24	20 51.3	-4 20 16	+0.9757	.5631	+0.078	-9.5508	.9707
	15 B.A.C. 6536	6	-5	-62	1 50.8	+0 29 6	-0.4043	.5618	+0.069	-9.5223	.9744
	15 d Sagittarii	5	-18	-87	6 7.0	+4 36 34	-0.6522	.5604	+0.246	-9.5166	.9752
	15 B.A.C. 6658	6	-51	-90	10 54.8	+9 14 40	-1.1251	.5587	+0.332	-9.5042	.9766
	15 f Sagittarii	5	+70	+11	19 19.2	-6 37 50	+0.7976	.5562	+0.477	-9.5356	.9728
	15 57 Sagittarii	5½	+30	-26	22 2.4	-4 0 2	+0.1730	.5549	+0.0524	-9.5208	.9747
	16 α Capricor.	5½	+71	+38	10 48.4	+8 20 51	+1.1437	.5498	+0.734	-9.5240	.9743
	16 π Capricor.	5	+51	-10	14 35.6	-11 59 20	+0.4620	.5481	+0.793	-9.5046	.9766
	16 ϕ Capricor. pr.	5	+28	-31	15 20.2	-11 16 10	+0.0890	.5479	+0.0802	-9.4956	.9776
	16 B.A.C. 7043	6½	+6	-56	15 24.1	-11 12 25	-0.3226	.5478	+0.0806	-9.4868	.9785
	16 α Capricor. pr.	6	+71	+23	15 48.8	-10 48 29	+0.9718	.5476	+0.0811	-9.5129	.9756
	16 B.A.C. 7097	6	-38	-90	18 32.9	-8 9 39	-1.0397	.5463	+0.0853	-9.4653	.9806
	16 ν Capricor.	5½	+72	+19	20 41.4	-6 5 18	+0.9226	.5454	+0.0885	-9.5037	.9767
	16 B.A.C. 7145	6½	-60	-90	20 58.3	-5 48 53	-1.2531	.5454	+0.0888	-9.5087	.9815
	17 B.A.C. 7209	6½	+72	+53	1 10.5	-1 44 48	+1.2537	.5436	+0.0948	-9.5019	.9769
	17 δ Capricor.	4	+72	+48	9 16.7	+6 6 5	+1.2290	.5401	+0.1060	-9.4841	.9788
	17 B.A.C. 7487	6½	-50	-90	23 23.3	-4 13 32	-1.2151	.5339	+1.242	-9.3856	.9968
	18 42 Capricor.	6	+21	-44	3 2.2	-0 41 19	-0.1294	.5325	+1.282	-9.4024	.9857
	18 44 Capricor.	6	+51	-15	3 47.5	+0 2 35	+0.3749	.5321	+1.291	-9.4129	.9849
	18 45 Capricor.	6	+75	+11	4 10.7	+0 25 5	+0.8153	.5320	+1.295	-9.4228	.9842
	18 μ Capricor.	5	+37	-28	8 56.9	+5 2 38	+0.1369	.5301	+1.348	-9.3887	.9866
	18 ϵ^2 Aquarii	6	-14	-90	17 44.7	-10 25 41	-0.7909	.5269	+1.440	-9.3252	.9901
	18 42 Aquarii	6	+77	+30	21 0.2	-7 15 42	+1.0809	.5259	+1.470	-9.3677	.9879
	19 σ Aquarii	4	+21	-48	4 11.7	-0 17 0	-0.2031	.5235	+1.535	-9.2939	.9914
	19 58 Aquarii	6	+39	-29	4 43.8	+0 14 8	+0.1319	.5234	+1.540	-9.3025	.9911
	19 64 Aquarii	6½	+21	-48	8 41.8	+4 5 8	-0.2109	.5222	+1.574	-9.2691	.9924
	19 70 Aquarii	6	+79	+35	13 31.0	+8 45 55	+1.1532	.5211	+1.612	-9.2901	.9916
	19 λ^1 Aquarii	6	+3	-73	22 17.9	-6 42 29	-0.5560	.5189	+1.673	-9.1646	.9953
	19 λ^2 Aquarii	7	+8	-66	22 23.1	-6 37 26	-0.4749	.5189	+1.675	-9.1677	.9952
	19 λ^3 Aquarii	7	+21	-49	22 40.8	-6 20 10	-0.2229	.5188	+1.677	-9.1769	.9950
	19 λ^4 Aquarii	7½	+13	-59	23 23.0	-5 39 14	-0.3750	.5187	+1.682	-9.1646	.9953
	20 χ Aquarii	5½	+68	-7	4 29.2	-0 41 49	+0.5370	.5180	+1.714	-9.1667	.9953
	20 24 Piscium	6½	-31	-90	23 40.6	-6 3 25	-1.1094	.5162	+1.810	-8.8307	.9990
	21 27 Piscium	5½	+29	-42	2 44.8	-3 4 33	-0.1094	.5161	+1.822	-8.8734	.9988
	21 29 Piscium	5½	+15	-59	4 25.2	-1 27 2	-0.3843	0.5162	+1.828	-8.8165	9.9991

**ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF
PLANETS AND STARS BY THE MOON, FOR THE YEAR 1868.**

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of δ .	At Washington Mean Time of Conjunction.					
			North-ern.	South-ern.		H	Y	p'	q'	Log $\sin D$	Log $\cos D$
Dec. 21	B.A.C. 81	6 $\frac{1}{2}$	+87	+18	16 28.6	+10 15 43	+0.9454	0.5170	+1.861	-8.7107	9.9994
21	10 Ceti	6	-42	-90	17 35.7	+11 20 55	-1.2249	.5171	+1.864	-8.1322	0.0000
21	14 Ceti	6 $\frac{1}{2}$	+45	-28	22 19.1	- 8 3 55	+0.1520	.5177	+1.871	-8.3309	9.9999
21	15 Ceti	6	+54	-19	23 8.5	- 7 15 56	+0.3040	.5178	+1.873	-8.3302	9.9999
22	26 Ceti	6 $\frac{1}{2}$	+90	+13	13 10.8	+ 6 22 1	+0.8768	.5209	+1.881	+8.0629	0.0000
22	29 Ceti	6 $\frac{1}{2}$	+75	- 4	15 21.3	+ 8 28 40	+0.5841	.5215	+1.880	+8.3578	9.9999
22	33 Ceti	6	+58	-16	16 41.9	+ 9 46 57	+0.3573	.5220	+1.880	+8.4840	.9908
22	35 Ceti	6 $\frac{1}{2}$	+69	- 8	17 43.5	+10 46 47	+0.5165	.5222	+1.878	+8.4916	.9908
22	γ Piscium	6	+24	-48	20 27.0	-10 34 30	-0.2161	.5234	+1.876	+8.7075	.9994
22	B.A.C. 408	6 $\frac{1}{2}$	-19	-86	22 59.0	- 8 7 2	-0.9652	.5241	+1.873	+8.8491	.9989
23	ν Piscium	4 $\frac{1}{2}$	+35	-36	8 34.0	+ 1 10 50	-0.0104	.5280	+1.853	+8.9246	.9985
23	64 Ceti	6 $\frac{1}{2}$	+ 1	-77	23 34.0	- 8 16 29	-0.6340	.5353	+1.796	+9.1411	.9958
23	ξ^1 Ceti	4 $\frac{1}{2}$	- 8	-82	0 22.2	- 7 29 50	-0.7845	.5359	+1.792	+9.1557	.9955
24	B.A.C. 741	6 $\frac{1}{2}$	- 4	-81	6 0.5	- 2 1 59	-0.7293	.5389	+1.762	+9.1909	.9945
24	ξ^2 Ceti	4	+90	+19	7 48.7	- 0 17 14	+0.9190	.5399	+1.751	+9.1364	.9959
24	B.A.C. 830	6	+17	-54	14 42.3	+ 6 23 17	-0.3469	.5444	+1.705	+9.2473	.9931
24	μ Ceti	4	+69	- 5	15 52.3	+ 7 31 4	+0.5107	.5447	+1.696	+9.2202	.9939
25	B.A.C. 987	6 $\frac{1}{2}$	+ 3	-70	4 18.0	- 4 27 29	-0.6039	.5530	+1.592	+9.3370	.9895
25	γ Tauri	4	+90	+17	13 15.8	+ 4 12 16	+0.8476	.5594	+1.498	+9.3348	.9896
26	Wei.III.1085	8 $\frac{1}{2}$	+86	+ 8	4 5.6	- 5 28 41	+0.6564	.5704	+1.311	+9.4033	.9856
26	Wei. IV. 24	9	+90	+16	6 54.6	- 2 45 39	+0.7825	.5725	+1.270	+9.4099	.9852
26	Lal. 7753	7 $\frac{1}{2}$	+39	-26	6 59.7	- 2 40 47	+0.0575	.5727	+1.269	+9.4207	.9837
26	B.A.C. 1281	7	- 1	-71	7 2.4	- 2 38 7	-0.6624	.5727	+1.268	+9.4482	.9822
26	Rumk. 1108	9	+90	+46	7 34.3	- 2 7 22	+1.1735	.5731	+1.259	+9.4013	.9857
26	48 Tauri	6	+90	+22	9 6.1	- 0 38 49	+0.8728	.5741	+1.238	+9.4149	.9848
26	Rumk. 1136	6	+41	-22	9 32.5	- 0 13 21	+0.0815	.5746	+1.231	+9.4373	.9831
26	γ Tauri	4	+90	+20	10 49.9	+ 1 1 15	+0.8371	.5756	+1.210	+9.4216	.9843
26	55 Tauri	7	+31	-32	10 51.9	+ 1 3 11	-0.0848	.5756	+1.210	+9.4457	.9824
26	Rumk. 1161	7	-32	-73	11 30.5	+ 1 40 22	-1.0995	.5761	+1.200	+9.4723	.9800
26	Rumk. 1163	8	+19	-44	11 33.8	+ 1 43 34	-0.2976	.5761	+1.200	+9.4531	.9817
26	δ^1 Tauri	4	-23	-73	12 8.5	+ 2 16 58	-0.9927	.5765	+1.190	+9.4716	.9801
26	63 Tauri	6	+26	-37	12 21.9	+ 2 29 54	-0.1788	.5767	+1.187	+9.4525	.9818
26	B.A.C. 1351	6 $\frac{1}{2}$	+35	-28	12 23.4	+ 2 31 25	-0.0225	.5767	+1.187	+9.4487	.9821
26	δ^2 Tauri	6	-12	-73	12 38.4	+ 2 45 52	-0.8354	.5769	+1.183	+9.4693	.9803
26	Lal. 8249	7 $\frac{1}{2}$	+11	-54	12 45.7	+ 2 52 53	-0.4461	.5770	+1.181	+9.4603	.9811
26	Lal. 8256	8	+22	-42	12 48.4	+ 2 55 26	-0.2405	.5770	+1.180	+9.4554	.9815
26	δ^3 Tauri	5	-55	-73	13 13.7	+ 3 19 49	-1.2697	.5773	+1.174	+9.4811	.9791
26	70 Tauri	7	+90	+18	13 19.6	+ 3 25 35	+0.7927	.5774	+1.172	+9.4306	.9836
26	Lal. 8311	8	+90	+56	13 32.1	+ 3 37 33	+1.2431	.5774	+1.169	+9.4193	.9845
26	Rumk. 1188	6 $\frac{1}{2}$	+90	+56	13 32.2	+ 3 37 43	+1.2445	.5774	+1.169	+9.4192	.9845
26	Rumk. 1189	6	+29	-33	13 38.5	+ 3 43 43	-0.1148	.5775	+1.167	+9.4547	.9816
26	71 Tauri	6	+90	+46	13 38.6	+ 3 43 50	+1.1601	.5775	+1.167	+9.4218	.9843
26	Rumk. 1192	6	+12	-51	13 41.5	+ 3 46 36	-0.4192	.5776	+1.167	+9.4623	.9809
26	Rumk. 1198	6	+90	+68	13 57.9	+ 4 2 25	+1.2948	.5778	+1.162	+9.4192	.9845
26	Rumk. 1200	6	+90	+57	14 10.6	+ 4 14 41	+1.2474	.5781	+1.159	+9.4211	.9843
26	Rumk. 1203	6	+74	+ 4	14 29.1	+ 4 32 31	+0.5475	.5783	+1.154	+9.4405	.9828
26	75 Tauri	6	+69	+ 1	14 31.7	+ 4 35 3	+0.4932	.5784	+1.153	+9.4420	.9827
26	δ^4 Tauri	4 $\frac{1}{2}$	+90	+26	14 35.2	+ 4 38 24	+0.9072	.5784	+1.153	+9.4314	.9835
26	δ^5 Tauri	4 $\frac{1}{2}$	+90	+33	14 37.7	+ 4 40 46	+1.0060	.5785	+1.152	+9.4290	.9837
26	Rumk. 1210	6	+90	+14	14 45.6	+ 4 48 24	+0.7223	.5784	+1.150	+9.4368	.9831
26	Rumk. 1212	6	- 3	-72	14 52.8	+ 4 55 19	-0.6929	.5784	+1.148	+9.4721	.9800
26	Rumk. 1214	6	-25	-73	14 55.2	+ 4 57 39	-0.1055	.5784	+1.147	+9.4798	.9792
26	Rumk. 1215	7	-28	-73	14 55.8	+ 4 58 13	-1.0462	.5784	+1.147	+9.4806	.9792
26	B.A.C. 1391	5	+90	+16	15 25.7	+ 5 27 4	+0.7584	.5788	+1.139	+9.4378	.9830
26	81 Tauri	5 $\frac{1}{2}$	+90	+57	15 28.8	+ 5 30 1	+1.2468	0.5789	+1.138	+9.4242	9.9841

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1868.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of δ .	At Washington Mean Time of Conjunction.					
			North- ern.	South- ern.		H	Y	p'	q'	Log sin D	Log cos D
					^h ^m	^h ^m ^s					
Dec. 26	B.A.C. 1304	7	+90	+19	15 31.5	+ 5 32 38	+0.8104	0.5789	+1.137	+9.4367	9.9831
26	Rumk. 1227	7	+90	+49	15 46.8	+ 5 47 22	+1.1855	.5791	+1.133	+9.4277	.9838
26	85 Tauri	6	+90	+48	15 59.4	+ 5 59 33	+1.1708	.5793	+1.130	+9.4237	.9838
26	Rumk. 1232		+63	- 3	16 11.7	+ 6 11 21	+0.4225	.5794	+1.126	+9.4486	.9821
26	Rumk. 1233		-14	-73	16 17.7	+ 6 17 12	-0.8668	.5795	+1.125	+9.4800	.9792
26	Rumk. 1235		+90	+37	16 23.8	+ 6 23 4	+1.0544	.5796	+1.123	+9.4330	.9834
26	B.A.C. 1406	7	+90	+17	16 44.3	+ 6 42 50	+0.7631	.5799	+1.118	+9.4415	.9827
26	Rumk. 1238	10	+80	+ 8	17 5.2	+ 7 2 54	+0.6074	.5801	+1.112	+9.4464	.9823
26	Lal. 8599	9	- 2	-69	17 9.2	+ 7 6 49	-0.6633	.5802	+1.111	+9.4775	.9795
26	Lal. 8610	8	+43	-19	17 17.5	+ 7 14 47	+0.1243	.5800	+1.109	+9.4590	.9812
26	Lal. 8613	8	+31	-30	17 18.8	+ 7 16 3	-0.0814	.5800	+1.109	+9.4641	.9808
26	α Tauri	1	+87	+11	17 42.0	+ 7 38 25	+0.6654	.5803	+1.102	+9.4467	.9823
26	89 Tauri	7	+90	+60	18 39.4	+ 8 33 44	+1.2578	.5810	+1.086	+9.4341	.9833
26	Rumk. 1241		+90	+21	19 22.9	+ 9 15 35	+0.8287	.5815	+1.074	+9.4471	.9823
26	Rumk. 1243	8	+90	+23	19 36.0	+ 9 28 10	+0.8578	.5816	+1.070	+9.4470	.9823
26	Rumk. 1246	7	+35	-26	20 3.5	+ 9 54 43	-0.0187	.5820	+1.062	+9.4697	.9802
26	Rumk. 1247		+90	+14	20 3.8	+ 9 55 2	+0.7058	.5820	+1.062	+9.4520	.9818
26	Rumk. 1254		+90	+17	20 19.9	+10 10 27	+0.7580	.5821	+1.058	+9.4514	.9819
26	Lal. 8852	9½	+44	-17	20 39.7	+10 29 32	+0.1426	.5824	+1.052	+9.4674	.9804
26	Rumk. 1269	6½	-54	-72	21 56.1	+11 43 7	-1.2607	.5833	+1.043	+9.5027	.9768
26	B.A.C. 1468	6	-43	-72	22 0.8	+11 47 39	-1.1877	.5834	+1.042	+9.5013	.9770
26	Rumk. 1276		-17	-72	22 22.4	-11 51 30	-0.8985	.5836	+1.023	+9.4957	.9776
26	B.A.C. 1478	7½	-31	-72	23 1.2	-11 14 7	-1.0784	.5841	+1.011	+9.5012	.9770
26	Rumk. 1283	7	+90	+39	23 3.8	-11 11 40	+1.0651	.5841	+1.010	+9.4508	.9819
27	ι Tauri	5½	-33	-72	0 8.5	-10 9 24	-1.0940	.5860	+0.990	+9.5040	.9767
27	Rumk. 1299	7½	+42	-19	0 22.2	- 9 56 12	+0.1055	.5852	+0.986	+9.4773	.9795
27	Rumk. 1300		+46	-15	0 24.5	- 9 53 57	+0.1634	.5852	+0.986	+9.4760	.9796
27	Rumk. 1301	6	-30	-72	0 25.4	- 9 53 4	-1.0651	.5852	+0.985	+9.5040	.9767
27	Rumk. 1302	7	-22	-72	0 26.0	- 9 52 31	-0.9741	.5852	+0.985	+9.5020	.9769
27	B.A.C. 1526	6	+90	+25	2 40.8	- 7 42 43	+0.8608	.5867	+0.945	+9.4645	.9807
27	m Tauri	5½	+18	-42	6 46.5	- 3 46 15	-0.3223	.5891	+0.870	+9.5007	.9770
27	B.A.C. 1651	6½	-34	-71	12 17.8	+ 1 32 28	-1.1041	.5928	+0.765	+9.5272	.9739
27	115 Tauri	5½	+90	+33	14 51.8	+ 4 0 30	+0.9478	.5943	+0.712	+9.4863	.9786
27	119 Tauri	5½	+64	+ 2	16 53.2	+ 5 57 15	+0.4297	.5955	+0.671	+9.5013	.9770
27	120 Tauri	6	+71	+ 7	17 25.0	+ 6 27 52	+0.5151	.5959	+0.658	+9.5002	.9771
28	χ^1 Orionis	4½	-13	-70	1 43.6	- 9 32 56	-0.8362	.6002	+0.484	+9.5392	.9723
28	χ^2 Orionis	6	+19	-37	1 57.2	- 9 19 56	-0.2918	.6002	+0.480	+9.5282	.9737
28	χ^3 Orionis	5	+30	-25	5 19.5	- 6 5 34	-0.1096	.6014	+0.411	+9.5275	.9738
28	χ^4 Orionis	5	+ 4	-54	5 29.8	- 5 55 38	-0.5562	.6017	+0.400	+9.5369	.9726
28	68 Orionis	6	+29	-24	8 12.0	- 2 51 5	-0.1133	.6031	+0.0330	+9.5302	.9735
28	71 Orionis	5½	+74	+13	9 49.8	- 1 45 58	+0.5465	.6035	+0.0306	+9.5169	.9751
28	15 Geminor	8	-25	-69	14 50.8	+ 3 3 1	-1.0002	.6053	+0.0192	+9.5515	.9706
28	15 Geminor	6	-26	-69	14 51.2	+ 3 3 28	-1.0083	.6053	+0.0192	+9.5516	.9705
28	16 Geminor	6	- 5	-68	14 55.6	+ 3 7 38	-0.7094	.6055	+0.0191	+9.5457	.9714
28	ν Geminor	4½	+12	-42	15 19.7	+ 3 30 48	-0.4215	.6055	+0.0184	+9.5400	.9722
29	ζ Gemin. tr.	4	-15	-69	4 58.3	- 7 23 34	-0.8553	.6087	-0.0135	+9.5495	.9708
29	56 Geminor	5	-20	-70	11 52.3	- 0 46 16	-0.9317	.6091	-0.0296	+9.5481	.9710
29	B.A.C. 2432	6½	+90	+61	12 21.3	- 0 18 28	+1.2167	.6091	-0.0304	+9.5019	.9769
29	g Geminor	5½	+74	+10	21 15.1	+ 8 13 43	+0.5450	.6087	-0.0511	+9.5088	.9761
30	B.A.C. 2683	6	+21	-37	4 27.4	- 8 51 25	-0.2659	.6076	-0.0678	+9.5172	.9751
30	ζ^1 Cancri	4½	+90	+16	7 22.1	- 6 3 43	+0.6917	.6072	-0.0743	+9.4909	.9781
30	ζ^2 Cancri	7½	+90	+16	7 22.2	- 6 3 37	+0.6944	.6072	-0.0744	+9.4908	.9781
30	δ^1 Cancri	6	+16	-44	11 42.3	- 1 54 0	-0.3559	.6062	-0.0835	+9.5071	.9763
30	δ^2 Cancri	6	+90	+24	12 41.9	- 0 56 43	+0.8276	.6059	-0.0857	+9.4775	.9795
30	δ Cancri	6	+12	-49	14 55.5	+ 1 11 28	-0.4213	0.6052	-0.0902	+9.5022	9.9769

**ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF
PLANETS AND STARS BY THE MOON, FOR THE YEAR 1868.**

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Wash- ington Mean Time of δ .	At Washington Mean Time of Conjunction.					
			North- ern.	South- ern.		H	Y	p'	q'	Log sin D	Log cos D
Dec. 30	δ Cancr	4	-25	-72	^h 20 ^m 3.3	^h + 6 ^m 7 ^s 1	-1.0095	0.6034	-.1008	+9.5044	9.9766
31	α^1 Cancr	6	+90	+59	1 3.2	+10 54 59	+1.2534	.6016	-.1107	+9.4356	.9832
31	α^2 Cancr	6	+90	+32	1 10.9	+11 2 27	+0.9817	.6016	-.1109	+9.4425	.9827
31	π^1 Cancr	6 $\frac{1}{2}$	+90	+22	7 4.1	- 7 18 15	+0.8515	.5990	-.1220	+9.4275	.9839
31	π^2 Cancr	6	+90	+15	8 12.7	- 6 12 19	+0.7492	.5985	-.1240	+9.4264	.9839
31	7 Leonis	6 $\frac{1}{2}$	+46	-17	16 31.3	+ 1 46 54	+0.1755	0.5946	-.1368	+9.4118	9.9850

NOTES. — B. A. C., British Association Catalogue.

Lal., Lalande's *Histoire Céleste Française*. Bailey's Ed.

Rumk., Rumker's Catalogue.

Wels., Welsch's *Positiones Medias Stellarum Fixarum*.

OCCULTATIONS OF PLANETS AND STARS BY THE MOON, VISIBLE AT
WASHINGTON, D. C., DURING THE YEAR 1868.

Date.	Star's Name.	Magnitude.	IMMERSION.				EMERSION.				Duration of Occultation.		
			Washington		Angle from		Washington		Angle from				
			Sidereal Time.	Mean Time.	North Point.	Ver- tex.	Sidereal Time.	Mean Time.	North Point.	Ver- tex.			
Jan.	4 B.A.C. 830 †	6	h m	h m	325°	16°	h m	h m	58°	107°	0 38		
	6 γ Tauri	4	23 33	4 30	285	231	0 36	5 33	110	57	1 3		
	6 70 Tauri	7	2 32	7 29	263	223	3 44	8 40	131	114	1 11		
	6 Runk. 1203		4 13	9 10	298	295	5 31	10 27	88	119	1 18		
	6 δ¹ Tauri	4½	4 40	9 36	206	215	4 58	9 55	180	198	0 18		
	6 Runk. 1210		4 32	9 28	262	267	5 47	10 43	123	148	1 15		
	6 B.A.C. 1391	5	5 30	10 26	251	280	6 38	11 34	130	175	1 8		
	6 B.A.C. 1394	7	5 42	10 38	238	269	6 40	11 36	142	187	0 58		
	6 Runk. 1232		6 46	11 42	325	12	7 36	12 32	51	102	0 50		
	6 B.A.C. 1406	7	7 14	12 9	254	304	8 18	13 13	119	172	1 4		
	6 Runk. 1238	10	7 40	12 35	289	340	9 45	13 41	83	137	1 5		
	6 α Tauri	1	8 22	13 17	283	336	9 24	14 20	87	141	1 3		
	6 Runk. 1241		10 7	15 2	271	324	11 1	15 56	95	146	0 54		
	6 Runk. 1243	8	10 19	15 15	269	321	11 13	16 8	98	148	0 53		
	6 Runk. 1247 †		10 51	15 47	308	0	11 33	16 29	58	107	0 42		
	6 Runk. 1254 †		11 4	15 59	301	351	11 49	16 44	66	113	0 45		
	7 111 Tauri	6	1 26	6 18	192	138	Star 0.6 south of C's limb.		8 21	70	27	1 1	
	7 115 Tauri	5½	2 28	7 20	314	262	3 29	8 21	152	98	0 33		
	7 130 Tauri	6	23 48	4 39	227	174	0 21	5 12	42	350	0 47		
	9 f Geminor.	6	4 2	8 47	316	262	4 49	9 33	84	34	1 3		
	11 18 Leonis	6	4 57	9 33	251	199	6 0	10 36	97	66	1 3		
	11 B.A.C. 3345	6	6 12	10 48	167	117	Star 3.4 south of C's limb.		11 11	15 31	93	0 23	
	15 β Virginis	5	10 8	14 28	211	170	11 11	15 31	119	168	1 14		
	27 81 Aquarii †	6	4 17	7 51	0	50	4 40	8 14	113	164	0 56		
Feb.	2 Wei. III. 1085	8½	5 47	8 56	264	304	7 0	10 10	113	164	0 56		
	2 Wei. IV. 24	9	9 13	12 23	260	313	10 9	13 18	113	164	0 56		
	2 Runk. 1103	7	10 3	13 12	6	58	Star 2.1 north of C's limb.		12 8	15 17	99	141	0 49
	2 48 Tauri *	6	11 19	14 28	272	320	12 8	15 17	99	141	0 49		
	3 B.A.C. 1526	6	2 39	5 45	318	272	3 44	6 50	71	41	1 5		
	8 44 Leonis	6	12 9	14 54	190	224	12 49	15 34	122	165	0 40		
	8 B.A.C. 3562	6½	12 15	15 0	198	235	13 3	15 48	114	159	0 48		
	11 48 Virginis †	6	7 0	9 34	232	181	7 55	10 29	87	38	0 55		
	12 94 Virginis	6	13 6	15 36	229	215	14 28	16 57	78	86	1 22		
	13 δ¹ Libræ	6	10 50	13 16	282	238	11 50	14 15	31	354	0 59		
	15 24 Scorpii	5	14 44	17 1	225	201	16 3	18 20	102	94	1 19		
	1 Runk. 1241		4 47	6 7	286	295	6 11	7 31	97	137	1 24		
	1 Runk. 1243	8	5 6	6 26	279	295	6 30	7 49	102	146	1 23		
	1 Runk. 1247		5 58	7 18	310	345	7 7	8 27	67	116	1 9		
1 Runk. 1254		6 17	7 37	299	339	7 31	8 50	77	128	1 14			
1 Runk. 1283	7	9 43	11 2	261	315	10 40	11 59	105	157	0 58			
2 132 Tauri	6	10 20	11 35	188	243	10 31	11 46	168	222	0 11			
4 f Geminor.	6	4 35	5 43	325	273	5 15	6 23	31	343	0 40			
6 18 Leonis	6	7 11	8 10	240	196	8 24	9 24	86	58	1 13			
7 c Leonis	5	16 11	17 6	241	293	17 4	17 59	80	131	0 53			
18 B.A.C. 7097	6	16 20	16 31	329	285	17 5	17 16	41	2	0 45			
20 ε² Aquarii *	6	15 41	15 44	251	200	16 34	16 37	131	80	0 53			
28 70 Tauri	7	6 37	6 10	248	294	7 42	7 15	129	181	1 5			
28 Runk. 1203		8 14	7 47	310	4	9 9	8 42	61	115	0 55			
28 75 Tauri	6	8 24	7 57	326	20	9 6	8 39	45	99	0 42			
28 δ¹ Tauri	4½	8 21	7 55	229	283	9 7	8 40	141	195	0 46			
28 ε² Tauri	4½	8 46	8 19	186	239	Star 1.0 south of C's limb.		9 31	9 4	96	149	1 4	
28 Runk. 1210		8 26	7 59	275	329	9 31	9 4	96	149	1 4			
28 B.A.C. 1391	5	9 13	8 46	276	330	10 13	9 46	94	146	1 0			

OCCULTATIONS OF PLANETS AND STARS BY THE MOON, VISIBLE AT
WASHINGTON, D. C., DURING THE YEAR 1868.

Date.	Star's Name.	Magnitude.	IMMERSION.				EMERSION.				Duration of Occultation.			
			Washington		Angle from		Washington		Angle from					
			Sideral Time.	Mean Time.	North Point.	Ver- tex.	Sideral Time.	Mean Time.	North Point.	Ver- tex.				
			h m	h m	°	°	h m	h m	°	°	h m	h m		
Mar. 23	B.A.C. 1394	7	9 19	8 52	266	320	10 18	9 51	103	155	0 59			
28	Rumk. 1235		10 25	9 58	219	271	10 57	10 30	149	200	0 32			
28	B.A.C. 1406 †	7	10 38	10 11	294	345	11 28	11 1	74	123	0 50			
28	Rumk. 1238	10	11 39	11 11	4	52	Star 0'1	north of	♄'s limb.					
28	α Tauri *	1	11 50	11 23	347	34	12 4	11 37	20	65	0 14			
April 29	115 Tauri	5½	6 34	6 2	300	354	7 32	7 1	60	114	0 58			
6	48 Virginis	6	7 10	6 7	236	185	8 6	7 4	82	33	0 56			
7	94 Virginis	6	12 14	11 7	241	216	13 34	12 27	65	58	1 20			
8	♄ Libræ	6	9 24	8 13	291	241	10 9	8 58	27	340	0 45			
10	24 Scorpii *	5	10 46	9 27	202	152	11 22	10 3	127	77	0 36			
24	Wei. IV. 24	9	9 21	7 8	187	240	Star 1'1	south of	♄'s limb.					
24	Rumk. 1103	7	9 10	6 57	297	351	10 5	7 52	76	128	0 55			
24	48 Tauri *	6	11 15	9 1	215	264	11 39	9 26	156	202	0 25			
28	B.A.C. 2731	6½	10 3	7 34	321	5	10 33	8 4	10	59	0 31			
May 3	♄ Virginis	6	17 47	14 58	223	273	18 40	15 50	98	149	0 53			
6	γ Libræ	4½	16 52	13 51	316	335	17 33	14 31	14	42	0 41			
16	27 Piscium	5½	18 54	15 12	246	196	19 42	16 1	155	109	0 49			
25	3 Cancri	6	14 53	10 37	349	38	Star 1'6	north of	♄'s limb.					
31	♄ Virginis	5	14 53	10 14	243	266	16 7	11 27	106	143	1 14			
June 4	29 Ophiuchi	6	17 39	12 43	217	228	18 43	13 47	125	148	1 4			
8	♄ Capricor. pr.	5	17 45	12 33	238	206	18 54	13 42	138	118	1 9			
8	B.A.C. 7043	6½	18 12	13 0	337	309	18 59	13 47	40	21	0 47			
24	♄ Leonis	4	13 52	7 39	315	4	14 35	8 21	39	91	0 43			
24	49 Leonis	6	15 18	9 4	203	251	15 58	9 44	115	166	0 40			
28	94 Virginis	6	15 16	8 46	207	227	16 21	9 51	104	136	1 5			
July 1	24 Scorpii	5	15 19	8 37	295	278	16 37	9 56	27	27	1 19			
7	♄ Capricor.	5	14 4	6 8	247	238	15 13	7 17	170	178	1 9			
8	58 Aquarii *	6	15 55	8 45	248	197	16 45	9 36	136	85	0 50			
8	64 Aquarii	6½	20 57	13 47	333	310	22 27	15 17	85	83	1 30			
14	♄ Tauri	4	22 22	14 48	280	228	23 27	15 53	123	73	1 5			
15	70 Tauri	7	22 14	14 36	332	280	22 52	15 14	60	7	0 38			
15	Lal. 8311	8	22 19	14 41	224	172	22 45	15 7	168	115	0 27			
15	Rumk. 1189	6½	22 20	14 42	224	171	22 45	15 7	169	116	0 26			
15	71 Tauri	6	22 18	14 40	249	196	23 3	15 25	144	91	0 45			
15	Rumk. 1200		23 10	15 32	197	144	Star 0'2	south of	♄'s limb.					
15	♄ Tauri	4½	23 15	15 37	292	238	0 19	16 41	105	51	1 4			
15	♄ Tauri	4½	23 16	15 38	272	218	0 17	16 39	125	71	1 2			
15	Rumk. 1210		23 41	16 3	329	276	0 31	16 52	68	19	0 50			
16	115 Tauri	5½	23 12	15 30	317	265	23 57	16 14	67	13	0 45			
24	46 Virginis	6½	17 17	9 4	208	256	18 6	9 54	109	159	0 50			
24	48 Virginis *	6	18 55	10 43	209	269	19 35	11 23	116	167	0 40			
27	γ Libræ	4½	16 41	8 17	239	256	18 3	9 39	87	120	1 22			
Aug. 1	57 Sagittarii	5½	18 20	9 36	221	252	18 55	10 11	168	204	0 35			
3	42 Capricor.	6	0 30	15 37	264	300	1 35	16 42	140	184	1 5			
4	♄ Aquarii	4	1 56	16 59	272	313	3 0	18 3	135	182	1 5			
6	27 Piscium	5½	23 4	14 0	341	328	0 11	15 7	77	82	1 7			
7	15 Ceti †	6	17 53	8 45	307	256	18 48	9 40	90	39	0 55			
11	Wei. III. 1085	8½	23 42	14 17	0	306	0 4	14 39	39	345	0 22			
12	B.A.C. 1526	6	22 33	13 5	14	322	Star 0'9	north of	♄'s limb.					
15	B.A.C. 2731	6½	2 5	16 25	240	187	2 54	17 14	117	63	0 49			
Sept. 29	♄ Capricor. pr.	5	18 13	7 39	265	238	19 42	9 8	114	105	1 29			
1	♄ Aquarii †	6	4 18	17 31	331	21	5 5	18 17	72	123	0 47			
1	♄ Aquarii †	7	4 15	17 28	312	2	5 11	18 24	91	142	0 56			

OCCULTATIONS OF PLANETS AND STARS BY THE MOON, VISIBLE AT WASHINGTON, D. C., DURING THE YEAR 1868.

Date.	Star's Name.	Magnitude.	IMMERSION.				EMERSION.				Duration of Occultation.	
			Washington		Angle from		Washington		Angle from			
			Sideral Time.	Mean Time.	North Point.	Ver- tex.	Sideral Time.	Mean Time.	North Point.	Ver- tex.		
Sept.	3 14 Ceti	6½	h m	h m	243°	280°	h m	h m	168°	211°	h m	
	4 33 Ceti †	6	18 54	7 56	317	266	19 48	8 50	83	33	0 53	
	4 35 Ceti	6½	19 48	8 49	284	233	20 53	9 55	121	73	1 5	
	8 89 Tauri	7	22 36	11 22	229	175	23 7	11 53	163	111	0 31	
	8 Rumk. 1241		23 26	12 12	318	265	0 19	13 4	75	21	0 53	
	8 Rumk. 1243	8	23 37	12 22	308	254	0 36	13 22	86	32	0 59	
	8 Rumk. 1247		0 24	13 10	338	284	1 7	13 52	57	4	0 42	
	8 Rumk. 1254		0 34	13 19	319	265	1 33	14 19	76	25	0 59	
	11 ♄ Geminor.	6	1 38	14 12	181	129	Star 1' 7" south of	♄'s limb.				
	27 ♄ Capricor.	5	21 44	9 15	259	258	22 58	10 30	148	165	1 15	
	Oct.	28 64 Aquarii	6½	21 34	9 1	354	339	22 19	9 47	55	51	0 46
		3 ♄ Ceti	4	3 38	14 45	222	244	4 6	15 13	184	214	0 28
4 ♄ Tauri		4	23 44	10 47	233	182	0 25	11 28	173	124	0 41	
5 ♄ Tauri		4	21 42	8 42	292	241	22 37	9 37	100	47	0 55	
5 70 Tauri		7	0 28	11 27	269	216	1 35	12 35	129	80	1 8	
5 Rumk. 1203			2 9	13 8	299	254	3 29	14 28	99	75	1 20	
5 75 Tauri		6	2 18	13 17	309	265	3 35	14 34	88	66	1 17	
5 ♂ Tauri		4½	2 40	13 39	199	160	Star 1' 7" south of	♄'s limb.				
5 Rumk. 1210		5	2 29	13 28	257	216	3 41	14 40	139	120	1 12	
5 B.A.C. 1391		5	3 40	14 39	232	212	4 31	15 30	160	157	0 51	
5 B.A.C. 1394		7	4 12	15 11	196	191	Star 0' 2" south of	♄'s limb.				
5 Rumk. 1232			4 50	15 49	299	311	6 13	17 12	88	128	1 23	
5 B.A.C. 1406	7	6 7	17 5	197	236	6 16	17 14	185	226	0 9		
5 Rumk. 1238	10	6 11	17 10	255	295	7 23	18 22	125	175	1 13		
6 115 Tauri	5½	4 28	15 22	191	164	Star 0' 9" south of	♄'s limb.					
8 B.A.C. 2432	6½	4 0	14 47	182	128	Star 2' 3" south of	♄'s limb.					
9 ♄ Canceri	6	5 15	15 58	291	239	6 23	17 5	56	12	1 7		
12 ♂ Leonis	4	6 30	17 1	341	290	Star 0' 3" north of	♄'s limb.					
22 57 Sagittarii	5½	18 50	4 44	331	319	19 46	5 40	44	44	0 56		
24 42 Capricor. †	6	2 23	12 8	291	339	3 25	13 10	108	159	1 2		
25 ♂ Aquarii †	4	3 42	13 22	292	342	4 41	14 22	109	160	1 0		
27 27 Piscium	5½	0 52	10 25	328	344	2 7	11 40	91	124	1 15		
27 29 Piscium	5½	3 55	13 27	332	12	5 2	14 35	86	133	1 8		
27 ♄ Piscium	4½	6 20	15 44	285	335	7 22	16 46	112	164	1 2		
Nov. 1 Wei. III. 1085	8½	22 48	8 1	282	229	23 49	9 3	117	64	1 2		
1 Rumk. 1103	7	2 45	11 57	282	250	4 8	13 21	117	118	1 23		
1 Rumk. 1136	6	6 48	16 0	330	18	7 37	16 49	51	103	0 49		
2 B.A.C. 1526	6	21 56	7 5	265	216	22 45	7 55	123	71	0 50		
3 71 Orionis	5½	8 27	17 31	270	319	9 40	18 44	84	139	1 13		
5 ♂ Canceri	4½	7 39	16 35	261	248	9 2	17 58	76	105	1 23		
5 ♂ Canceri	7½	7 39	16 35	260	248	9 2	17 59	76	105	1 23		
6 ♂ Canceri *	6	1 42	10 35	175	127	Star 4' 0" south of	♄'s limb.					
6 ♂ Canceri †	6	1 24	10 17	249	202	2 13	11 7	101	50	0 49		
6 ♂ Canceri	6½	8 45	17 37	245	235	10 6	18 59	78	105	1 21		
7 ♄ Leonis †	5	3 0	11 49	293	243	3 45	12 34	47	355	0 45		
7 ♂ Leonis	1½	8 24	17 12	340	305	Star 0' 9" north of	♄'s limb.					
8 ♄ Leonis	5	8 39	17 23	235	196	9 55	18 39	77	54	1 16		
19 ♄ Capricor.	5	22 58	7 1	281	313	23 45	7 48	100	139	0 47		
19 ♄ Capricor. pr.	5	0 25	8 28	12	56	Star 1' 4" north of	♄'s limb.					
25 29 Ceti	6½	21 13	4 52	293	247	22 28	6 7	120	81	1 15		
25 33 Ceti	6	23 13	6 52	315	285	0 35	8 14	104	95	1 22		
25 35 Ceti	6½	0 34	8 13	263	254	1 44	9 23	157	169	1 10		
27 ♄ Ceti	4	21 1	4 32	321	269	21 53	5 24	82	30	0 52		

OCCULTATIONS OF PLANETS AND STARS BY THE MOON, VISIBLE AT
WASHINGTON, D. C., DURING THE YEAR 1868.

Date.	Star's Name.	Magnitude.	IMMERSION.				EMERSION.				Duration of Occultation.
			Washington		Angle from		Washington		Angle from		
			Sidereal Time.	Mean Time.	North Point.	Vertex.	Sidereal Time.	Mean Time.	North Point.	Vertex.	
Nov. 29	Rumk. 1232		^h ^m 21 37	^h ^m 5 1	15°	325	^h ^m Star 1' 1	^h ^m north of	♄'s limb.	^h ^m 0 39	
29	B.A.C. 1406	7	21 41	5 4	268	219	22 20	5 43	115	63	0 39
29	Rumk. 1238	10	21 59	5 23	300	249	22 52	6 15	92	39	0 52
29	α Tauri	1	22 31	5 54	232	230	23 27	6 51	111	57	0 57
29	Rumk. 1241		0 44	8 7	198	145	Star 1' 2	south of	♄'s limb.		
29	Lal. 8852	9½	2 34	9 57	353	309	3 7	10 29	43	6	0 32
29	Rumk. 1299	7½	7 45	15 7	329	21	8 36	15 59	66	121	0 52
29	Rumk. 1300		7 41	15 3	315	6	8 42	16 4	80	134	1 1
30	119 Tauri	5½	22 32	5 51	11	322	Star 0' 7	north of	♄'s limb.		
30	120 Tauri	6	22 40	6 0	320	270	23 21	6 40	63	11	0 41
Dec. 2	γ Geminor.	5½	3 52	11 3	252	197	4 59	12 10	107	56	1 8
26	Wei. IV. 24	9	23 33	5 10	263	209	0 31	6 8	138	86	0 58
26	Rumk. 1136	6	4 5	9 41	19	17	Star 1' 8	north of	♄'s limb.		
26	Rumk. 1203		9 47	15 23	252	306	10 39	16 15	119	171	0 52
26	75 Tauri	6	9 49	15 24	265	318	10 44	16 20	107	158	0 56
26	Rumk. 1210		10 22	15 58	198	250	10 34	16 10	174	226	0 11
26	B.A.C. 1391	5	11 1	16 36	199	250	11 13	16 49	171	221	0 13
26	B.A.C. 1394	7	11 12	16 48	185	235	Star 2' 2	south of	♄'s limb.		
26	Rumk. 1232*		11 30	17 5	300	349	12 15	17 50	70	114	0 45
27	119 Tauri †	5½	12 16	17 48	305	355	12 57	18 29	56	102	0 41
28	71 Orionis	5½	2 58	8 26	251	197	4 2	9 30	128	81	1 4
30	♄ ¹ Cancri †	4½	0 26	5 47	246	200	1 10	6 32	113	64	0 44
30	♄ ² Cancri †	7½	0 26	5 47	245	199	1 10	6 32	113	64	0 44
31	π ² Cancri *	6	1 31	6 48	209	164	1 59	7 16	138	90	0 28

* Whole occultation below the horizon of Washington.

† Immersion below the horizon of Washington.

‡ Emersion below the horizon of Washington.

The *Angles of Position*, for the points of contact, are for *direct vision*, and are reckoned from the Moon's *North Point* and from its *Vertex* towards the west. For *inverted image*, add 180° to the angles given.

JUPITER'S SATELLITES, 1868. 465

WASHINGTON MEAN TIME.

JANUARY.

			d	h	m	s				d	h	m	s
I.	Transit	Egress	1	0	3		I.	Shadow	Egress	8	3	3	
I.	Shadow	Egress	1	1	8		II.	Transit	Ingress	8	11	57	
II.	Transit	Ingress	1	9	10		II.	Shadow	Ingress	8	14	1	
II.	Shadow	Ingress	1	11	23		II.	Transit	Egress	8	14	49	
II.	Transit	Egress	1	12	3		II.	Shadow	Egress	8	16	48	
II.	Shadow	Egress	1	14	12		I.	Ocult.	Disapp.	8	21	5	
IV.	Transit	Ingress	1	19	4		I.	Eclipse	Reapp.	9	0	20	59.4
I.	Ocult.	Disapp.	1	19	4		I.	Transit	Ingress	9	18	15	
I.	Eclipse	Reapp.	1	22	25	42.0	I.	Shadow	Ingress	9	19	14	
IV.	Transit	Egress	1	23	39		I.	Transit	Egress	9	20	34	
IV.	Shadow	Ingress W.	2	5	27		I.	Shadow	Egress	9	21	32	
IV.	Shadow	Egress	2	9	30		IV.	Ocult.	Disapp.	10	3	20	
I.	Transit	Ingress	2	16	14		II.	Ocult.	Disapp. W.	10	6	10	
I.	Shadow	Ingress	2	17	18		IV.	Ocult.	Reapp. W.	10	7	54	
I.	Transit	Egress	2	18	33		II.	Eclipse	Reapp.	10	10	55	22.0
I.	Shadow	Egress	2	19	37		IV.	Eclipse	Disapp.	10	12	57	15.8
II.	Ocult.	Disapp.	3	3	21		I.	Ocult.	Disapp.	10	15	36	
II.	Eclipse	Reapp. W.	3	8	17	39.0	IV.	Eclipse	Reapp.	10	16	40	42.0
I.	Ocult.	Disapp.	3	13	35		I.	Eclipse	Reapp.	10	18	49	46.3
I.	Eclipse	Reapp.	3	16	54	30.3	III.	Transit	Ingress W.	11	7	16	
III.	Transit	Ingress	4	2	52		III.	Transit	Egress	11	10	53	
III.	Transit	Egress W.	4	6	30		III.	Shadow	Ingress	11	11	13	
III.	Shadow	Ingress W.	4	7	11		I.	Transit	Ingress	11	12	45	
III.	Shadow	Egress	4	10	41		I.	Shadow	Ingress	11	13	43	
I.	Transit	Ingress	4	10	44		III.	Shadow	Egress	11	14	42	
I.	Shadow	Ingress	4	11	47		I.	Transit	Egress	11	15	4	
I.	Transit	Egress	4	13	3		I.	Shadow	Egress	11	16	1	
I.	Shadow	Egress	4	14	6		II.	Transit	Ingress	12	1	21	
II.	Transit	Ingress	4	22	33		II.	Shadow	Ingress	12	3	19	
II.	Shadow	Ingress	5	0	42		II.	Transit	Egress	12	4	13	
II.	Transit	Egress	5	1	26		II.	Shadow	Egress W.	12	6	6	
II.	Shadow	Egress	5	3	30		I.	Ocult.	Disapp.	12	10	6	
I.	Ocult.	Disapp. W.	5	8	5		I.	Eclipse	Reapp.	12	13	18	37.3
I.	Eclipse	Reapp.	5	11	23	22.6	I.	Transit	Ingress W.	13	7	15	
I.	Transit	Ingress	6	5	14		I.	Shadow	Ingress	13	8	12	
I.	Transit	Ingress W.	6	6	16		I.	Transit	Egress	13	9	35	
I.	Shadow	Egress W.	6	7	33		I.	Shadow	Egress	13	10	30	
I.	Shadow	Egress	6	8	34		II.	Ocult.	Disapp.	13	19	35	
II.	Ocult.	Disapp.	6	16	46		II.	Eclipse	Reapp.	14	0	14	36.2
II.	Eclipse	Reapp.	6	21	36	48.6	I.	Ocult.	Disapp.	14	4	36	
I.	Ocult.	Disapp.	7	2	35		I.	Eclipse	Reapp. W.	14	7	47	23.4
I.	Eclipse	Reapp. W.	7	5	52	9.8	III.	Ocult.	Disapp.	14	21	22	
III.	Ocult.	Disapp.	7	16	56		III.	Ocult.	Reapp.	15	0	58	
III.	Ocult.	Reapp.	7	20	34		III.	Eclipse	Disapp.	15	1	12	16.2
III.	Eclipse	Disapp.	7	21	10	11.0	I.	Transit	Ingress	15	1	46	
I.	Transit	Ingress	7	23	44		I.	Shadow	Ingress	15	2	41	
III.	Eclipse	Reapp.	8	0	28	16.2	I.	Transit	Egress	15	4	5	
I.	Shadow	Ingress	8	0	45		III.	Eclipse	Reapp.	15	4	29	35.8
I.	Transit	Egress	8	2	4		I.	Shadow	Egress	15	4	59	

466 JUPITER'S SATELLITES, 1868.

WASHINGTON MEAN TIME.

JANUARY.

II.	Transit	Ingress	15	14	46		II.	Shadow	Egress	22	22	1
II.	Shadow	Ingress	15	16	37		I.	Occult.	Disapp.	23	1	8
II.	Transit	Egress	15	17	37		I.	Eclipse	Reapp.	23	4	11 18.0
II.	Shadow	Egress	15	19	25		I.	Transit	Ingress	23	22	18
I.	Occult.	Disapp.	15	23	7		I.	Shadow	Ingress	23	23	5
I.	Eclipse	Reapp.	16	2	16	11.6	I.	Transit	Egress	24	0	37
I.	Transit	Ingress	16	20	16		I.	Shadow	Egress	24	1	23
I.	Shadow	Ingress	16	21	9		II.	Occult.	Disapp.	24	11	51
I.	Transit	Egress	16	22	35		II.	Eclipse	Reapp.	24	16	11 1.1
I.	Shadow	Egress	16	23	28		I.	Occult.	Disapp.	24	19	38
II.	Occult.	Disapp.	17	9	0		I.	Eclipse	Reapp.	24	22	40 2.2
II.	Eclipse	Reapp.	17	13	33	9.4	III.	Transit	Ingress	25	16	10
I.	Occult.	Disapp.	17	17	37		I.	Transit	Ingress	25	16	48
I.	Eclipse	Reapp.	17	20	44	57.2	I.	Shadow	Ingress	25	17	34
III.	Transit	Ingress	18	11	42		I.	Transit	Egress	25	19	7
I.	Transit	Ingress	18	14	46		III.	Shadow	Ingress	25	19	17
III.	Shadow	Ingress	18	15	15		III.	Transit	Egress	25	19	45
III.	Transit	Egress	18	15	18		I.	Shadow	Egress	25	19	52
IV.	Transit	Ingress	18	15	25		III.	Shadow	Egress	25	22	44
I.	Shadow	Ingress	18	15	38		II.	Transit	Ingress W.	26	6	59
I.	Transit	Egress	18	17	6		II.	Shadow	Ingress	26	8	32
I.	Shadow	Egress	18	17	57		II.	Transit	Egress	26	9	50
III.	Shadow	Egress	18	18	43		II.	Shadow	Egress	26	11	19
IV.	Transit	Egress	18	19	56		I.	Occult.	Disapp.	26	14	9
IV.	Shadow	Ingress	18	23	46		I.	Eclipse	Reapp.	26	17	8 50.1
IV.	Shadow	Egress	19	3	42		IV.	Occult.	Disapp.	26	23	55
II.	Transit	Ingress	19	4	10		IV.	Occult.	Reapp.	27	4	22
II.	Shadow	Ingress W.	19	5	56		IV.	Eclipse	Disapp.	27	7	15 43.9
II.	Transit	Egress W.	19	7	1		IV.	Eclipse	Reapp.	27	10	51 30.9
II.	Shadow	Egress	19	8	43		I.	Transit	Ingress	27	11	19
I.	Occult.	Disapp.	19	12	7		I.	Shadow	Ingress	27	12	3
I.	Eclipse	Reapp.	19	15	13	46.6	I.	Transit	Egress	27	13	38
I.	Transit	Ingress	20	9	17		I.	Shadow	Egress	27	14	21
I.	Shadow	Ingress	20	10	7		II.	Occult.	Disapp.	28	1	17
I.	Transit	Egress	20	11	36		II.	Eclipse	Reapp. W.	28	5	30 23.3
I.	Shadow	Egress	20	12	25		I.	Occult.	Disapp.	28	8	39
II.	Occult.	Disapp.	20	22	25		I.	Eclipse	Reapp.	28	11	37 33.8
II.	Eclipse	Reapp.	21	2	52	27.9	I.	Transit	Ingress W.	29	5	49
I.	Occult.	Disapp. W.	21	6	37		III.	Occult.	Disapp. W.	29	6	18
I.	Eclipse	Reapp.	21	9	42	31.6	I.	Shadow	Ingress W.	29	6	32
III.	Occult.	Disapp.	22	1	49		I.	Transit	Egress	29	8	8
I.	Transit	Ingress	22	3	47		I.	Shadow	Egress	29	8	50
I.	Shadow	Ingress	22	4	36		III.	Eclipse	Reapp.	29	12	32 29.1
I.	Transit	Egress W.	22	6	6		II.	Transit	Ingress	29	20	24
I.	Shadow	Egress W.	22	6	54		II.	Shadow	Ingress	29	21	50
III.	Eclipse	Reapp.	22	8	31	24.0	II.	Transit	Egress	29	23	15
II.	Transit	Ingress	22	17	34		II.	Shadow	Egress	30	0	37
II.	Shadow	Ingress	22	19	14		I.	Occult.	Disapp.	30	3	9
II.	Transit	Egress	22	20	26		I.	Eclipse	Reapp. W.	30	6	6 18.6

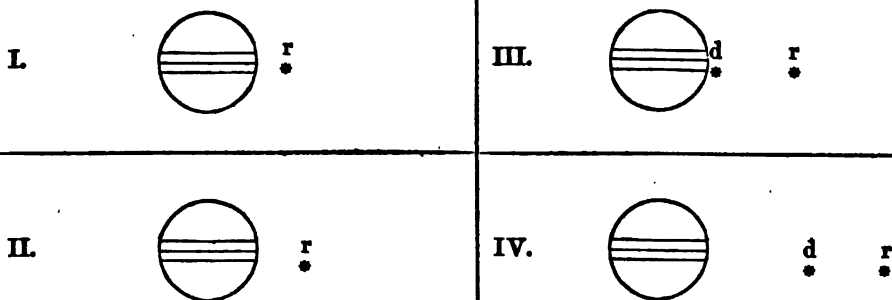
JUPITER'S SATELLITES, 1868. 467

WASHINGTON MEAN TIME.

JANUARY.

I. Transit	Ingress	^d 31 ^h 0 ^m 20	II. Occult.	Disapp.	^d 31 ^h 14 ^m 43
I. Shadow	Ingress	31 1 0	II. Eclipse	Reapp.	31 18 48 56.2
I. Transit	Egress	31 2 39	I. Occult.	Disapp.	31 21 40
I. Shadow	Egress	31 3 19			

Phases of the Eclipses of the Satellites for an Inverting Telescope.



FEBRUARY.

I. Eclipse	Reapp.	^d 1 ^h 0 ^m 35 ^s 1.5	IV. Shadow	Ingress	^d 4 ^h 18 ^m 4
I. Transit	Ingress	1 18 50	IV. Shadow	Egress	4 21 53
I. Shadow	Ingress	1 19 29	I. Transit	Ingress	5 7 52
III. Transit	Ingress	1 20 40	I. Shadow	Ingress	5 8 27
I. Transit	Egress	1 21 9	I. Transit	Egress	5 10 11
I. Shadow	Egress	1 21 47	I. Shadow	Egress	5 10 45
III. Shadow	Ingress	1 23 19	III. Occult.	Disapp.	5 10 48
III. Transit	Egress	2 0 14	III. Eclipse	Reapp.	5 16 33 25.9
III. Shadow	Egress	2 2 46	II. Transit	Ingress	5 23 14
II. Transit	Ingress	2 9 49	II. Shadow	Ingress	6 0 26
II. Shadow	Ingress	2 11 8	II. Transit	Egress	6 2 4
II. Transit	Egress	2 12 39	II. Shadow	Egress	6 3 13
II. Shadow	Egress	2 13 55	I. Occult.	Disapp.	6 5 11
I. Occult.	Disapp.	2 16 10	I. Eclipse	Reapp.	6 8 1 13.6
I. Eclipse	Reapp.	2 19 3 47.7	I. Transit	Ingress	7 2 22
I. Transit	Ingress	3 13 21	I. Shadow	Ingress	7 2 56
I. Shadow	Ingress	3 13 58	I. Transit	Egress	7 4 41
I. Transit	Egress	3 15 40	I. Shadow	Egress	7 5 14
I. Shadow	Egress	3 16 16	II. Occult.	Disapp.	7 17 35
H. Occult.	Disapp.	4 4 9	II. Eclipse	Reapp.	7 21 26 53.3
II. Eclipse	Reapp.	4 8 8 21.4	I. Occult.	Disapp.	7 23 42
I. Occult.	Disapp.	4 10 41	I. Eclipse	Reapp.	8 2 29 55.0
IV. Transit	Ingress	4 12 11	I. Transit	Ingress	8 20 53
I. Eclipse	Reapp.	4 13 32 30.2	I. Shadow	Ingress	8 21 25
IV. Transit	Egress	4 16 33	I. Transit	Egress	8 23 12

468 JUPITER'S SATELLITES, 1868.

WASHINGTON MEAN TIME.

FEBRUARY.

			d	h	m				d	h	m	s
I.	Shadow	Egress	8	23	43	II.	Shadow	Egress	9	16	30	
III.	Transit	Ingress	9	1	11	I.	Occult.	Disapp.	9	18	12	
III.	Shadow	Ingress	9	3	21	I.	Eclipse	Reapp.	9	20	58	39.8
III.	Transit	Egress	9	4	44	I.	Transit	Ingress	10	15	23	
III.	Shadow	Egress	9	6	47	I.	Shadow	Ingress	10	15	53	
II.	Transit	Ingress	9	12	39	I.	Transit	Egress	10	17	42	
II.	Shadow	Ingress	9	13	44	I.	Shadow	Egress	10	18	11	
II.	Transit	Egress	9	15	29							

The Satellites are not visible from February 10th to April 13th, Jupiter being too near the Sun.

APRIL.

			d	h	m	s				d	h	m	s
I.	Eclipse	Disapp.	13	11	56	17.7	I.	Transit	Egress	18	1	5	
II.	Shadow	Ingress	13	13	3		I.	Eclipse	Disapp.	18	19	21	52.3
II.	Transit	Ingress	13	14	16		II.	Eclipse	Disapp.	18	21	7	39.9
I.	Occult.	Reapp.	13	14	47		I.	Occult.	Reapp.	18	22	18	
III.	Shadow	Ingress	13	15	38		II.	Occult.	Reapp.	19	1	12	
II.	Shadow	Egress	13	15	45		I.	Shadow	Ingress	19	16	36	
II.	Transit	Egress	13	16	59		I.	Transit	Ingress	19	17	18	
III.	Transit	Ingress	13	18	5		I.	Shadow	Egress	19	18	53	
III.	Shadow	Egress	13	18	56		I.	Transit	Egress	19	19	35	
III.	Transit	Egress	13	21	23		IV.	Eclipse	Disapp.	20	2	49	28.0
I.	Shadow	Ingress	14	9	10		IV.	Eclipse	Reapp.	20	5	36	51.0
I.	Transit	Ingress	14	9	46		IV.	Occult.	Disapp.	20	9	25	
I.	Shadow	Egress	14	11	27		IV.	Occult.	Reapp.	20	12	28	
I.	Transit	Egress	14	12	4		I.	Eclipse	Disapp.	20	13	50	23.9
I.	Eclipse	Disapp.	15	6	24	50.8	II.	Shadow	Ingress	20	15	37	
II.	Eclipse	Disapp.	15	7	49	15.6	I.	Occult.	Reapp.	20	16	48	
I.	Occult.	Reapp.	15	9	17		II.	Transit	Ingress	20	17	6	
II.	Occult.	Reapp.	15	11	46		II.	Shadow	Egress	20	18	19	
I.	Shadow	Ingress	16	3	38		III.	Shadow	Ingress	20	19	40	
I.	Transit	Ingress	16	4	17		II.	Transit	Egress	20	19	47	
I.	Shadow	Egress	16	5	55		III.	Transit	Ingress	20	22	35	
I.	Transit	Egress	16	6	35		III.	Shadow	Egress	20	22	57	
I.	Eclipse	Disapp.	17	0	53	21.5	III.	Transit	Egress	21	1	50	
II.	Shadow	Ingress	17	2	20		I.	Shadow	Ingress	21	11	4	
II.	Transit	Ingress	17	3	41		I.	Transit	Ingress	21	11	48	
I.	Occult.	Reapp.	17	3	47		I.	Shadow	Egress	21	13	21	
II.	Shadow	Egress	17	5	2		I.	Transit	Egress	21	14	5	
III.	Eclipse	Disapp.	17	5	32	21.0	I.	Eclipse	Disapp.	22	8	18	56.0
II.	Transit	Egress	17	6	23		II.	Eclipse	Disapp.	22	10	27	8.0
III.	Occult.	Reapp.	17	11	25		I.	Occult.	Reapp.	22	11	18	
I.	Shadow	Ingress	17	22	7		II.	Occult.	Reapp.	22	14	37	
I.	Transit	Ingress	17	22	47		I.	Shadow	Ingress	23	5	33	
I.	Shadow	Egress	18	0	24		I.	Transit	Ingress	23	6	19	


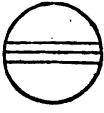
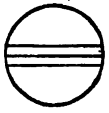
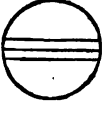
JUPITER'S SATELLITES, 1868. 469

WASHINGTON MEAN TIME.

APRIL.

		d	h	m	s			d	h	m	s
I.	Shadow	Egress	23	7	50	I.	Occult.	Reapp.	27	16	48
I.	Transit	Egress	23	8	36	II.	Transit	Ingress	27	19	54
I.	Eclipse	Disapp.	24	2	47 25.7	II.	Shadow	Egress	27	20	54
II.	Shadow	Ingress	24	4	55	II.	Transit	Egress	27	22	34
I.	Occult.	Reapp.	24	5	48	III.	Shadow	Ingress	27	23	41
II.	Transit	Ingress	24	6	30	III.	Shadow	Egress	28	2	57
II.	Shadow	Egress	24	7	37	III.	Transit	Ingress	28	3	3
II.	Transit	Egress	24	9	11	III.	Transit	Egress	28	6	16
III.	Eclipse	Disapp.	24	9	33 28.7	I.	Shadow	Ingress	28	12	59
III.	Occult.	Reapp.	24	15	51	IV.	Shadow	Ingress	28	13	37
I.	Shadow	Ingress	25	0	2	I.	Transit	Ingress	28	13	50
I.	Transit	Ingress	25	0	49	I.	Shadow	Egress	28	15	16
I.	Shadow	Egress	25	2	19	I.	Transit	Egress	28	16	7
I.	Transit	Egress	25	3	6	IV.	Shadow	Egress	28	16	40
I.	Eclipse	Disapp.	25	21	15 55.7	IV.	Transit	Ingress	28	21	38
II.	Eclipse	Disapp.	25	23	45 29.3	IV.	Transit	Egress	29	0	26
I.	Occult.	Reapp.	26	0	18	I.	Eclipse	Disapp.	29	10	12 58.4
II.	Occult.	Reapp.	26	4	2	II.	Eclipse	Disapp.	29	13	4 52.5
I.	Shadow	Ingress	26	18	30	I.	Occult.	Reapp.	29	13	18
I.	Transit	Ingress	26	19	19	II.	Occult.	Reapp.	29	17	27
I.	Shadow	Egress	26	20	47	I.	Shadow	Ingress	30	7	28
I.	Transit	Egress	26	21	36	I.	Transit	Ingress	30	8	20
I.	Eclipse	Disapp.	27	15	44 25.8	I.	Shadow	Egress	30	9	45
II.	Shadow	Ingress	27	18	12	I.	Transit	Egress	30	10	37

Phases of the Eclipses of the Satellites for an Inverting Telescope.

I.		III.	
II.		IV.	

MAY.

		d	h	m	s			d	h	m	s
I.	Eclipse	Disapp.	1	4	41 25.7	II.	Transit	Egress	1	11	57
II.	Shadow	Ingress	1	7	30	III.	Eclipse	Disapp.	1	13	35 5.1
I.	Occult.	Reapp.	1	7	48	III.	Eclipse	Reapp.	1	16	39 7.3
II.	Transit	Ingress	1	9	18	III.	Occult.	Disapp.	1	17	5
II.	Shadow	Egress	1	10	11	III.	Occult.	Reapp.	1	20	17

470 JUPITER'S SATELLITES, 1868.

WASHINGTON MEAN TIME.

MAY.

		d	h	m	s			d	h	m	s
I. Shadow	Ingress	2	1	56		I. Transit	Ingress	9	4	50	
I. Transit	Ingress	2	2	50		I. Shadow	Egress	9	6	8	
I. Shadow	Egress	2	4	13		I. Transit	Egress	9	7	7	
I. Transit	Egress	2	5	7		I. Eclipse	Disapp.	10	1	3	52.3
I. Eclipse	Disapp.	2	23	9	55.5	I. Occult.	Reapp.	10	4	17	
I. Occult.	Reapp.	3	2	18		II. Eclipse	Disapp.	10	5	0	44.3
II. Eclipse	Disapp.	3	2	23	10.9	II. Occult.	Reapp.	10	9	40	
II. Occult.	Reapp.	3	6	51		I. Shadow	Ingress	10	22	19	
I. Shadow	Ingress	3	20	25		I. Transit	Ingress	10	23	20	
I. Transit	Ingress	3	21	20		I. Shadow	Egress	11	0	36	
I. Shadow	Egress	3	22	42		I. Transit	Egress	11	1	36	
I. Transit	Egress	3	23	37		I. Eclipse	Disapp.	11	19	32	20.6
I. Eclipse	Disapp.	4	17	38	24.3	I. Occult.	Reapp.	11	22	47	
II. Shadow	Ingress	4	20	47		II. Shadow	Ingress	11	23	22	
I. Occult.	Reapp.	4	20	48		II. Transit	Ingress	12	1	28	
II. Transit	Ingress	4	22	42		II. Shadow	Egress	12	2	3	
II. Shadow	Egress	4	23	28		II. Transit	Egress	12	4	6	
II. Transit	Egress	5	1	20		III. Shadow	Ingress	12	7	44	
III. Shadow	Ingress	5	3	42		III. Shadow	Egress	12	10	58	
III. Shadow	Egress	5	6	57		III. Transit	Ingress	12	11	56	
III. Transit	Ingress	5	7	30		III. Transit	Egress	12	15	3	
III. Transit	Egress	5	10	41		I. Shadow	Ingress	12	16	48	
I. Shadow	Ingress	5	14	54		I. Transit	Ingress	12	17	50	
I. Transit	Ingress	5	15	50		I. Shadow	Egress	12	19	5	
I. Shadow	Egress	5	17	11		I. Transit	Egress	12	20	6	
I. Transit	Egress	5	18	7		I. Eclipse	Disapp.	13	14	0	51.3
I. Eclipse	Disapp.	6	12	6	55.5	I. Occult.	Reapp.	13	17	17	
I. Occult.	Reapp.	6	15	18		II. Eclipse	Disapp.	13	18	19	56.7
II. Eclipse	Disapp.	6	15	42	29.1	II. Occult.	Reapp.	13	23	4	
II. Occult.	Reapp.	6	20	16		I. Shadow	Ingress	14	11	16	
IV. Eclipse	Disapp.	6	21	8	35.3	I. Transit	Ingress	14	12	20	
IV. Eclipse	Reapp.	6	23	43	22.1	I. Shadow	Egress	14	13	33	
IV. Occult.	Disapp.	7	6	15		I. Transit	Egress	14	14	36	
IV. Occult.	Reapp.	7	8	45		IV. Shadow	Ingress	15	7	56	
I. Shadow	Ingress	7	9	22		I. Eclipse	Disapp.	15	8	29	18.6
I. Transit	Ingress	7	10	20		IV. Shadow	Egress	15	10	47	
I. Shadow	Egress	7	11	39		I. Occult.	Reapp.	15	11	47	
I. Transit	Egress	7	12	37		II. Shadow	Ingress	15	12	40	
I. Eclipse	Disapp.	8	6	35	23.1	II. Transit	Ingress	15	14	51	
I. Occult.	Reapp.	8	9	48		II. Shadow	Egress	15	15	20	
II. Shadow	Ingress	8	10	5		II. Transit	Egress	15	17	29	
II. Transit	Ingress	8	12	5		IV. Transit	Ingress	15	18	18	
II. Shadow	Egress	8	12	46		IV. Transit	Egress	15	20	28	
II. Transit	Egress	8	14	43		III. Eclipse	Disapp.	15	21	36	49.2
III. Eclipse	Disapp.	8	17	36	0.8	III. Eclipse	Reapp.	16	0	38	50.8
III. Eclipse	Reapp.	8	20	39	3.0	III. Occult.	Disapp.	16	1	55	
III. Occult.	Disapp.	8	21	31		III. Occult.	Reapp.	16	5	1	
III. Occult.	Reapp.	9	0	40		I. Shadow	Ingress	16	5	45	
I. Shadow	Ingress	9	3	51		I. Transit	Ingress	16	6	50	

JUPITER'S SATELLITES, 1868. 471

WASHINGTON MEAN TIME.

MAY.

			d	h	m	s				d	h	m	s
I.	Shadow	Egress	16	8	2		IV.	Occult.	Reapp.	24	4	33	
I.	Transit	Egress	16	9	6		I.	Eclipse	Disapp.	24	4	51	40.0
I.	Eclipse	Disapp.	17	2	57	47.2	I.	Occult.	Reapp.	24	8	15	
I.	Occult.	Reapp.	17	6	17		II.	Eclipse	Disapp.	24	10	15	24.2
II.	Eclipse	Disapp.	17	7	38	8.8	II.	Occult.	Reapp. W.	24	15	14	
II.	Occult.	Reapp.	17	12	27		I.	Shadow	Ingress	25	2	8	
I.	Shadow	Ingress	18	0	14		I.	Transit	Ingress	25	3	19	
I.	Transit	Ingress	18	1	20		I.	Shadow	Egress	25	4	25	
I.	Shadow	Egress	18	2	31		I.	Transit	Egress	25	5	35	
I.	Transit	Egress	18	3	36		I.	Eclipse	Disapp.	25	23	20	7.1
I.	Eclipse	Disapp.	18	21	26	14.8	I.	Occult.	Reapp.	26	2	45	
I.	Occult.	Reapp.	19	0	47		II.	Shadow	Ingress	26	4	32	
II.	Shadow	Ingress	19	1	57		II.	Transit	Ingress	26	6	58	
II.	Transit	Ingress	19	4	14		II.	Shadow	Egress	26	7	12	
II.	Shadow	Egress	19	4	37		II.	Transit	Egress	26	9	34	
II.	Transit	Egress	19	6	51		III.	Shadow	Ingress W.	26	15	47	
III.	Shadow	Ingress	19	11	45		III.	Shadow	Egress	26	18	59	
III.	Shadow	Egress	19	14	58		I.	Shadow	Ingress	26	20	37	
III.	Transit	Ingress	19	16	19		III.	Transit	Ingress	26	20	41	
I.	Shadow	Ingress	19	18	42		I.	Transit	Ingress	26	21	49	
III.	Transit	Egress	19	19	24		I.	Shadow	Egress	26	22	53	
I.	Transit	Ingress	19	19	50		III.	Transit	Egress	26	23	43	
I.	Shadow	Egress	19	20	59		I.	Transit	Egress	27	0	5	
I.	Transit	Egress	19	22	6		I.	Eclipse	Disapp.	27	17	48	37.3
I.	Eclipse	Disapp. W.	20	15	54	45.1	I.	Occult.	Reapp.	27	21	14	
I.	Occult.	Reapp.	20	19	16		II.	Eclipse	Disapp.	27	23	34	24.1
II.	Eclipse	Disapp.	20	20	57	15.1	II.	Occult.	Reapp.	28	4	36	
II.	Occult.	Reapp.	21	1	51		I.	Shadow	Ingress W.	28	15	5	
I.	Shadow	Ingress	21	13	11		I.	Transit	Ingress	28	16	19	
I.	Transit	Ingress	21	14	19		I.	Shadow	Egress	28	17	22	
I.	Shadow	Egress W.	21	15	29		I.	Transit	Egress	28	18	35	
I.	Transit	Egress	21	16	35		I.	Eclipse	Disapp.	29	12	17	3.7
I.	Eclipse	Disapp.	22	10	23	11.9	I.	Occult.	Reapp. W.	29	15	44	
I.	Occult.	Reapp.	22	13	46		II.	Shadow	Ingress	29	17	49	
II.	Shadow	Ingress W.	22	15	15		II.	Transit	Ingress	29	20	20	
II.	Transit	Ingress	22	17	36		II.	Shadow	Egress	29	20	29	
II.	Shadow	Egress	22	17	55		II.	Transit	Egress	29	22	55	
II.	Transit	Egress	22	20	13		III.	Eclipse	Disapp.	30	5	38	1.6
III.	Eclipse	Disapp.	23	1	37	22.8	III.	Eclipse	Reapp.	30	8	38	0.8
III.	Eclipse	Reapp.	23	4	38	24.4	I.	Shadow	Ingress	30	9	34	
III.	Occult.	Disapp.	23	6	16		III.	Occult.	Disapp.	30	10	36	
I.	Shadow	Ingress	23	7	39		I.	Transit	Ingress	30	10	48	
I.	Transit	Ingress	23	8	49		I.	Shadow	Egress	30	11	51	
III.	Occult.	Reapp.	23	9	20		I.	Transit	Egress	30	13	4	
I.	Shadow	Egress	23	9	56		III.	Occult.	Reapp.	30	13	37	
I.	Transit	Egress	23	11	5		I.	Eclipse	Disapp.	31	6	45	31.6
IV.	Eclipse	Disapp. W.	23	15	28	44.4	I.	Occult.	Reapp.	31	10	13	
IV.	Eclipse	Reapp.	23	17	49	30.6	II.	Eclipse	Disapp.	31	12	52	29.6
IV.	Occult.	Disapp.	24	2	47		II.	Occult.	Reapp.	31	17	58	

472 JUPITER'S SATELLITES, 1868.

WASHINGTON MEAN TIME.

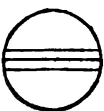
MAY.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

I.

d

*



III.

d

*

r

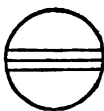
*



II.

d

*



IV.

d

*

r

*



JUNE.

			d	h	m	s				d	h	m	s
IV.	Shadow	Ingress	1	2	15			I.	Shadow	Egress	4	19	16
I.	Shadow	Ingress	1	4	2			I.	Transit	Egress	4	20	32
IV.	Shadow	Egress	1	4	53			I.	Eclipse	Disapp. W.	5	14	10 54.5
I.	Transit	Ingress	1	5	18			I.	Occult.	Reapp.	5	17	41
I.	Shadow	Egress	1	6	19			II.	Shadow	Ingress	5	20	24
I.	Transit	Egress	1	7	34			II.	Transit	Ingress	5	23	3
IV.	Transit	Ingress W.	1	14	41			II.	Shadow	Egress	5	23	4
IV.	Transit	Egress	1	15	53			II.	Transit	Egress	6	1	37
I.	Eclipse	Disapp.	2	1	13 58.4			III.	Eclipse	Disapp.	6	9	39 10.7
I.	Occult.	Reapp.	2	4	43			I.	Shadow	Ingress	6	11	28
II.	Shadow	Ingress	2	7	7			III.	Eclipse	Reapp.	6	12	38 7.5
II.	Transit	Ingress	2	9	42			I.	Transit	Ingress	6	12	46
II.	Shadow	Egress	2	9	47			I.	Shadow	Egress	6	13	45
II.	Transit	Egress	2	12	16			III.	Occult.	Disapp. W.	6	14	53
III.	Shadow	Ingress	2	19	48			I.	Transit	Egress W.	6	15	1
I.	Shadow	Ingress	2	22	31			III.	Occult.	Reapp.	6	17	50
III.	Shadow	Egress	2	22	59			I.	Eclipse	Disapp.	7	8	39 22.6
I.	Transit	Ingress	2	23	47			I.	Occult.	Reapp.	7	12	11
I.	Shadow	Egress	3	0	48			II.	Eclipse	Disapp. W.	7	15	29 25.4
III.	Transit	Ingress	3	0	59			II.	Eclipse	Reapp.	7	18	3 17.4
I.	Transit	Egress	3	2	3			II.	Occult.	Disapp.	7	18	7
III.	Transit	Egress	3	3	58			II.	Occult.	Reapp.	7	20	41
I.	Eclipse	Disapp.	3	19	42 27.5			I.	Shadow	Ingress	8	5	57
I.	Occult.	Reapp.	3	23	12			I.	Transit	Ingress	8	7	16
II.	Eclipse	Disapp.	4	2	11 22.9			I.	Shadow	Egress	8	8	14
II.	Eclipse	Reapp.	4	4	45 30.9			I.	Transit	Egress	8	9	31
II.	Occult.	Disapp.	4	4	46			I.	Eclipse	Disapp.	9	3	7 48.7
II.	Occult.	Reapp.	4	7	20			I.	Occult.	Reapp.	9	6	40
I.	Shadow	Ingress	4	16	59			II.	Shadow	Ingress	9	9	42
I.	Transit	Ingress	4	18	17			IV.	Eclipse	Disapp.	9	9	49 0.0

JUPITER'S SATELLITES, 1868. 473

WASHINGTON MEAN TIME.

JUNE.

			^d	^h	^m	^s				^d	^h	^m	^s	
IV.	Eclipse	Reapp.	9	11	54	6.2		II.	Shadow	Egress	W.	16	14	55
II.	Shadow	Egress	9	12	21			II.	Transit	Ingress	W.	16	15	4
II.	Transit	Ingress	9	12	24			II.	Transit	Egress		16	17	37
II.	Transit	Egress	W.	9	14	57		I.	Shadow	Ingress		17	2	20
III.	Shadow	Ingress	9	23	49			I.	Transit	Ingress		17	3	41
I.	Shadow	Ingress	10	0	25			III.	Shadow	Ingress		17	3	49
I.	Transit	Ingress	10	1	45			I.	Shadow	Egress		17	4	36
I.	Shadow	Egress	10	2	42			I.	Transit	Egress		17	5	56
III.	Shadow	Egress	10	2	59			III.	Shadow	Egress		17	6	59
I.	Transit	Egress	10	4	0			III.	Transit	Ingress		17	9	26
III.	Transit	Ingress	10	5	15			III.	Transit	Egress		17	12	20
III.	Transit	Egress	10	8	11			IV.	Shadow	Ingress		17	20	35
I.	Eclipse	Disapp.	10	21	36	18.9		IV.	Shadow	Egress		17	22	58
I.	Occult.	Reapp.	11	1	9			I.	Eclipse	Disapp.		17	23	30 8.5
II.	Eclipse	Disapp.	11	4	48	11.6		I.	Occult.	Reapp.		18	3	5
II.	Eclipse	Reapp.	11	7	21	47.4		II.	Eclipse	Disapp.		18	7	24 50.2
II.	Occult.	Disapp.	11	7	29			II.	Eclipse	Reapp.		18	9	57 53.2
II.	Occult.	Reapp.	11	10	9			II.	Occult.	Disapp.		18	10	10
I.	Shadow	Ingress	11	18	54			II.	Occult.	Reapp.		18	12	43
I.	Transit	Ingress	11	20	14			I.	Shadow	Ingress		18	20	48
I.	Shadow	Egress	11	21	11			I.	Transit	Ingress		18	22	10
I.	Transit	Egress	11	22	29			I.	Shadow	Egress		18	23	5
I.	Eclipse	Disapp.	12	16	4	45.0		I.	Transit	Egress		19	0	25
I.	Occult.	Reapp.	12	19	38			I.	Eclipse	Disapp.		19	17	58 35.6
II.	Shadow	Ingress	12	22	59			I.	Occult.	Reapp.		19	21	34
II.	Shadow	Egress	13	1	38			II.	Shadow	Ingress		20	1	34
II.	Transit	Ingress	13	1	44			II.	Shadow	Egress		20	4	12
II.	Transit	Egress	13	4	17			II.	Transit	Ingress		20	4	24
I.	Shadow	Ingress	13	13	22			II.	Transit	Egress		20	6	56
III.	Eclipse	Disapp.	W.	13	13	40 7.9		I.	Shadow	Ingress	W.	20	15	17
I.	Transit	Ingress	W.	13	14	43		I.	Transit	Ingress		20	16	39
I.	Shadow	Egress	W.	13	15	39		I.	Shadow	Egress		20	17	33
III.	Eclipse	Reapp.	13	16	38	0.9		III.	Eclipse	Disapp.		20	17	41 35.1
I.	Transit	Egress	13	16	58			I.	Transit	Egress		20	18	54
III.	Occult.	Disapp.	13	19	7			III.	Eclipse	Reapp.		20	20	38 23.7
III.	Occult.	Reapp.	13	22	2			III.	Occult.	Disapp.		20	23	18
I.	Eclipse	Disapp.	14	10	33	13.1		III.	Occult.	Reapp.		21	2	9
I.	Occult.	Reapp.	W.	14	14	7		I.	Eclipse	Disapp.		21	12	27 4.0
II.	Eclipse	Disapp.	14	18	6	10.9		I.	Occult.	Reapp.		21	16	3
II.	Eclipse	Reapp.	14	20	39	30.3		II.	Eclipse	Disapp.		21	20	42 46.3
II.	Occult.	Disapp.	14	20	50			II.	Eclipse	Reapp.		21	23	15 32.9
II.	Occult.	Reapp.	14	23	23			II.	Occult.	Disapp.		21	23	31
I.	Shadow	Ingress	15	7	51			II.	Occult.	Reapp.		22	2	2
I.	Transit	Ingress	15	9	12			I.	Shadow	Ingress		22	9	45
I.	Shadow	Egress	15	10	8			I.	Transit	Ingress		22	11	8
I.	Transit	Egress	15	11	27			I.	Shadow	Egress		22	12	1
I.	Eclipse	Disapp.	16	5	1	39.0		I.	Transit	Egress	W.	22	13	23
I.	Occult.	Reapp.	16	8	36			I.	Eclipse	Disapp.		23	6	55 29.8
II.	Shadow	Ingress	16	12	17			I.	Occult.	Reapp.		23	10	32

474 JUPITER'S SATELLITES, 1868.

WASHINGTON MEAN TIME.

JUNE.

				d	h	m	s				d	h	m	s	
II.	Shadow	Ingress	W.	23	14	52		II.	Shadow	Egress	27	6	48		
II.	Shadow	Egress		23	17	30		II.	Transit	Ingress	27	7	2		
II.	Transit	Ingress		23	17	43		II.	Transit	Egress	27	9	33		
II.	Transit	Egress		23	20	15		I.	Shadow	Ingress	27	17	11		
I.	Shadow	Ingress		24	4	14		I.	Transit	Ingress	27	18	35		
I.	Transit	Ingress		24	5	37		I.	Shadow	Egress	27	19	27		
I.	Shadow	Egress		24	6	30		I.	Transit	Egress	27	20	50		
III.	Shadow	Ingress		24	7	50		III.	Eclipse	Disapp.	27	21	42	25.8	
I.	Transit	Egress		24	7	52		III.	Eclipse	Reapp.	28	0	38	9.2	
III.	Shadow	Egress		24	10	58		III.	Occult.	Disapp.	28	3	24		
III.	Transit	Ingress	W.	24	13	35		III.	Occult.	Reapp.	28	6	13		
III.	Transit	Egress		24	16	25		I.	Eclipse	Disapp.	W.	28	14	20	55.9
I.	Eclipse	Disapp.		25	1	24	0.5	I.	Occult.	Reapp.	28	17	58		
I.	Occult.	Reapp.		25	5	1		II.	Eclipse	Disapp.	28	23	19	11.6	
II.	Eclipse	Disapp.		25	10	1	18.3	II.	Eclipse	Reapp.	29	1	51	25.4	
II.	Eclipse	Reapp.		25	12	33	48.5	II.	Occult.	Disapp.	29	2	9		
II.	Occult.	Disapp.	W.	25	12	50		II.	Occult.	Reapp.	29	4	40		
II.	Occult.	Reapp.	W.	25	15	21		I.	Shadow	Ingress	29	11	39		
I.	Shadow	Ingress		25	22	42		I.	Transit	Ingress	W.	29	13	4	
I.	Transit	Ingress		26	0	6		I.	Shadow	Egress	W.	29	13	55	
I.	Shadow	Egress		26	0	58		I.	Transit	Egress	W.	29	15	19	
I.	Transit	Egress		26	2	21		I.	Eclipse	Disapp.	30	8	49	21.8	
IV.	Eclipse	Disapp.		26	4	10	20.1	I.	Occult.	Reapp.	30	12	26		
IV.	Eclipse	Reapp.		26	5	57	25.3	II.	Shadow	Ingress	30	17	27		
I.	Eclipse	Disapp.		26	19	52	27.0	II.	Shadow	Egress	30	20	5		
I.	Occult.	Reapp.		26	23	29		II.	Transit	Ingress	30	20	20		
II.	Shadow	Ingress		27	4	10		II.	Transit	Egress	30	22	51		

Phases of the Eclipses of the Satellites for an Inverting Telescope.

I.

d

*



III.

d

*

r

*



II.

d

*

r

*



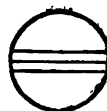
IV.

d

*

r

*



JUPITER'S SATELLITES, 1868. 475

WASHINGTON MEAN TIME.

JULY.

		d	h	m	s			d	h	m	s
I. Shadow	Ingress	1	6	8		II. Transit	Egress	8	1	25	
I. Transit	Ingress	1	7	32		I. Shadow	Ingress	8	8	2	
I. Shadow	Egress	1	8	24		I. Transit	Ingress	8	9	26	
I. Transit	Egress	1	9	47		I. Shadow	Egress	8	10	18	
III. Shadow	Ingress	1	11	51		I. Transit	Egress	8	11	41	
III. Shadow	Egress W.	1	14	59		III. Shadow	Ingress	8	15	52	
III. Transit	Ingress	1	17	40		III. Shadow	Egress	8	18	59	
III. Transit	Egress	1	20	28		III. Transit	Ingress	8	21	41	
I. Eclipse	Disapp	2	3	17	53.1	III. Transit	Egress	9	0	26	
I. Occult.	Reapp.	2	6	55		I. Eclipse	Disapp.	9	5	11	47.0
II. Eclipse	Disapp. W.	2	12	37	36.5	I. Occult.	Reapp.	9	8	49	
II. Eclipse	Reapp. W.	2	15	9	33.9	II. Eclipse	Disapp.	9	15	13	44.7
II. Occult.	Disapp. W.	2	15	28		II. Eclipse	Reapp. W.	9	17	45	9.5
II. Occult.	Reapp.	2	17	58		II. Occult.	Disapp.	9	18	3	
I. Shadow	Ingress	3	0	36		II. Occult.	Reapp.	9	20	32	
I. Transit	Ingress	3	2	1		I. Shadow	Ingress	10	2	30	
I. Shadow	Egress	3	2	52		I. Transit	Ingress	10	3	55	
I. Transit	Egress	3	4	16		I. Shadow	Egress	10	4	46	
I. Eclipse	Disapp.	3	21	46	19.5	I. Transit	Egress	10	6	9	
I. Occult.	Reapp.	4	1	23		I. Eclipse	Disapp.	10	23	40	14.0
II. Shadow	Ingress	4	6	45		I. Occult.	Reapp.	11	3	17	
II. Shadow	Egress	4	9	23		II. Shadow	Ingress	11	9	21	
II. Transit	Ingress	4	9	38		II. Shadow	Egress	11	11	58	
II. Transit	Egress	4	12	8		II. Transit	Ingress W.	11	12	13	
IV. Shadow	Ingress W.	4	14	55		II. Transit	Egress W.	11	14	42	
IV. Shadow	Egress	4	17	2		I. Shadow	Ingress	11	20	59	
I. Shadow	Ingress	4	19	5		I. Transit	Ingress	11	22	23	
I. Transit	Ingress	4	20	29		I. Shadow	Egress	11	23	15	
I. Shadow	Egress	4	21	21		I. Transit	Egress	12	0	37	
I. Transit	Egress	4	22	44		III. Eclipse	Disapp.	12	5	43	42.5
III. Eclipse	Disapp.	5	1	43	11.6	III. Eclipse	Reapp.	12	8	37	19.9
III. Eclipse	Reapp.	5	4	37	49.2	III. Occult.	Disapp.	12	11	26	
III. Occult.	Disapp.	5	7	27		III. Occult.	Reapp. W.	12	14	9	
III. Occult.	Reapp.	5	10	13		I. Eclipse	Disapp.	12	18	8	44.5
I. Eclipse	Disapp.	5	16	14	49.0	I. Occult.	Reapp.	12	21	45	
I. Occult.	Reapp.	5	19	52		IV. Eclipse	Disapp.	12	22	34	22.7
II. Eclipse	Disapp.	6	1	55	26.8	IV. Eclipse	Reapp.	12	23	59	25.5
II. Eclipse	Reapp.	6	4	27	7.8	II. Eclipse	Disapp.	13	4	31	32.6
II. Occult.	Disapp.	6	4	46		II. Eclipse	Reapp.	13	7	2	41.0
II. Occult.	Reapp.	6	7	15		II. Occult.	Disapp.	13	7	30	
I. Shadow	Ingress W.	6	13	33		II. Occult.	Reapp.	13	9	49	
I. Transit	Ingress W.	6	14	58		I. Shadow	Ingress W.	13	15	27	
I. Shadow	Egress W.	6	15	49		I. Transit	Ingress	13	16	51	
I. Transit	Egress	6	17	13		I. Shadow	Egress	13	17	43	
I. Eclipse	Disapp.	7	10	43	15.1	I. Transit	Egress	13	19	5	
I. Occult.	Reapp. W.	7	14	20		I. Eclipse	Disapp. W.	14	12	37	11.1
II. Shadow	Ingress	7	20	3		I. Occult.	Reapp.	14	16	13	
II. Shadow	Egress	7	22	40		II. Shadow	Ingress	14	22	39	
II. Transit	Ingress	7	22	56		II. Shadow	Egress	15	1	16	

476 JUPITER'S SATELLITES, 1868.

WASHINGTON MEAN TIME.

JULY.

			d	h	m	s				d	h	m	s
II.	Transit	Ingress	15	1	29			II.	Shadow	Egress	22	3	51
II.	Transit	Egress	15	3	58			II.	Transit	Ingress	22	4	0
I.	Shadow	Ingress	15	9	56			II.	Transit	Egress	22	6	28
I.	Transit	Ingress	15	11	19			I.	Shadow	Ingress W.	22	11	50
I.	Shadow	Egress W.	15	12	12			I.	Transit	Ingress W.	22	13	11
I.	Transit	Egress W.	15	13	33			I.	Shadow	Egress W.	22	14	6
III.	Shadow	Ingress	15	19	54			I.	Transit	Egress W.	22	15	25
III.	Shadow	Egress	15	22	59			III.	Shadow	Ingress	22	23	55
III.	Transit	Ingress	16	1	38			III.	Shadow	Egress	23	2	59
III.	Transit	Egress	16	4	20			III.	Transit	Ingress	23	5	30
I.	Eclipse	Disapp.	16	7	5	43.8		III.	Transit	Egress	23	8	10
I.	Occult.	Reapp.	16	10	41			I.	Eclipse	Disapp.	23	8	59 43.9
II.	Eclipse	Disapp.	16	17	49	44.0		I.	Occult.	Reapp. W.	23	12	33
II.	Eclipse	Reapp.	16	20	20	36.0		II.	Eclipse	Disapp.	23	20	25 34.8
II.	Occult.	Disapp.	16	20	36			II.	Eclipse	Reapp.	23	22	55 54.2
II.	Occult.	Reapp.	16	23	5			II.	Occult.	Disapp.	23	23	7
I.	Shadow	Ingress	17	4	24			II.	Occult.	Reapp.	24	1	34
I.	Transit	Ingress	17	5	47			I.	Shadow	Ingress	24	6	18
I.	Shadow	Egress	17	6	40			I.	Transit	Ingress	24	7	39
I.	Transit	Egress	17	8	1			I.	Shadow	Egress	24	8	34
I.	Eclipse	Disapp.	18	1	34	11.7		I.	Transit	Egress	24	9	53
I.	Occult.	Reapp.	18	5	9			I.	Eclipse	Disapp.	25	3	28 12.6
II.	Shadow	Ingress W.	18	11	57			I.	Occult.	Reapp.	25	7	0
II.	Shadow	Egress W.	18	14	34			II.	Shadow	Ingress W.	25	14	33
II.	Transit	Ingress W.	18	14	45			II.	Shadow	Egress	25	17	9
II.	Transit	Egress	18	17	13			II.	Transit	Ingress	25	17	15
I.	Shadow	Ingress	18	22	53			II.	Transit	Egress	25	19	43
I.	Transit	Ingress	19	0	15			I.	Shadow	Ingress	26	0	47
I.	Shadow	Egress	19	1	9			I.	Transit	Ingress	26	2	7
I.	Transit	Egress	19	2	29			I.	Shadow	Egress	26	3	3
III.	Eclipse	Disapp.	19	9	44	34.0		I.	Transit	Egress	26	4	21
III.	Eclipse	Reapp. W.	19	12	36	58.8		III.	Eclipse	Disapp. W.	26	13	45 55.8
III.	Occult.	Disapp. W.	19	15	20			III.	Eclipse	Reapp.	26	16	37 13.6
III.	Occult.	Reapp.	19	18	1			III.	Occult.	Disapp.	26	19	10
I.	Eclipse	Disapp.	19	20	2	43.2		III.	Occult.	Reapp.	26	21	48
I.	Occult.	Reapp.	19	23	37			I.	Eclipse	Disapp.	26	21	56 44.9
II.	Eclipse	Disapp.	20	7	7	29.7		I.	Occult.	Reapp.	27	1	28
II.	Eclipse	Reapp.	20	9	38	5.3		II.	Eclipse	Disapp.	27	9	43 18.4
II.	Occult.	Disapp.	20	9	52			II.	Eclipse	Reapp. W.	27	12	13 21.8
II.	Occult.	Reapp. W.	20	12	20			II.	Occult.	Disapp. W.	27	12	21
I.	Shadow	Ingress	20	17	21			II.	Occult.	Reapp. W.	27	14	48
I.	Transit	Ingress	20	18	43			I.	Shadow	Ingress	27	19	15
I.	Shadow	Egress	20	19	37			I.	Transit	Ingress	27	20	35
I.	Transit	Egress	20	20	57			I.	Shadow	Egress	27	21	31
IV.	Shadow	Ingress	21	9	17			I.	Transit	Egress	27	22	48
IV.	Shadow	Egress	21	11	6			I.	Eclipse	Disapp.	28	16	25 13.1
I.	Eclipse	Disapp. W.	21	14	31	10.0		I.	Occult.	Reapp.	28	19	55
I.	Occult.	Reapp.	21	18	5			II.	Shadow	Ingress	29	3	51
II.	Shadow	Ingress	22	1	15			II.	Shadow	Egress	29	6	27

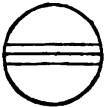
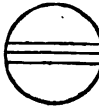
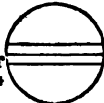

JUPITER'S SATELLITES, 1868. 477

WASHINGTON MEAN TIME.

JULY.

II. Transit	Ingress	^d 29 ^h 6 ^m 29 ^s	I. Eclipse	Disapp.	^d 30 ^h 10 ^m 53 ^s 48.2
II. Transit	Egress	29 8 57	III. Transit	Egress W.	30 11 55
I. Shadow	Ingress W.	29 13 44	I. Occult.	Reapp. W.	30 14 23
I. Transit	Ingress W.	29 15 2	II. Eclipse	Disapp.	30 23 1 17.9
I. Shadow	Egress	29 16 0	II. Eclipse	Reapp.	31 1 31 5.3
IV. Eclipse	Disapp.	29 17 2 37.9	II. Occult.	Disapp	31 1 35
I. Transit	Egress	29 17 15	II. Occult.	Reapp.	31 4 2
IV. Eclipse	Reapp.	29 17 56 23.1	I. Shadow	Ingress	31 8 12
III. Shadow	Ingress	30 3 55	I. Transit	Ingress	31 9 30
III. Shadow	Egress	30 6 59	I. Shadow	Egress	31 10 28
III. Transit	Ingress	30 9 17	I. Transit	Egress W.	31 11 43

Phases of the Eclipses of the Satellites for an Inverting Telescope.

I.	^d *		III.	^d * ^r *	
II.	^d * ^r *		IV.	^d * ^r *	

AUGUST.

I. Eclipse	Disapp.	^d 1 ^h 5 ^m 22 ^s 17.9	II. Occult.	Reapp.	^d 3 ^h 17 ^m 15 ^s
I. Occult.	Reapp.	1 8 50	I. Shadow	Ingress	3 21 9
II. Shadow	Ingress	1 17 9	I. Transit	Ingress	3 22 25
II. Transit	Ingress	1 19 43	I. Shadow	Egress	3 23 25
II. Shadow	Egress	1 19 45	I. Transit	Egress	4 0 38
II. Transit	Egress	1 22 10	I. Eclipse	Disapp.	4 18 19 20.8
I. Shadow	Ingress	2 2 41	I. Occult.	Reapp.	4 21 45
I. Transit	Ingress	2 3 58	II. Shadow	Ingress	5 6 27
I. Shadow	Egress	2 4 57	II. Transit	Ingress	5 8 56
I. Transit	Egress	2 6 11	II. Shadow	Egress	5 9 3
III. Eclipse	Disapp.	2 17 47 7.8	II. Transit	Egress W.	5 11 23
III. Eclipse	Reapp.	2 20 37 18.2	I. Shadow	Ingress W.	5 15 38
III. Occult.	Disapp.	2 22 55	I. Transit	Ingress	5 16 52
I. Eclipse	Disapp.	2 23 50 51.6	I. Shadow	Egress	5 17 54
III. Occult.	Reapp.	3 1 31	I. Transit	Egress	5 19 5
I. Occult.	Reapp.	3 3 18	III. Shadow	Ingress	6 7 56
II. Eclipse	Disapp. W.	3 12 19 0.0	III. Shadow	Egress W.	6 10 58

478 JUPITER'S SATELLITES, 1868.

WASHINGTON MEAN TIME.

AUGUST.

			d	h	m	s				d	h	m	s
I.	Eclipse	Disapp. W.	6	12	47	57.4		III.	Transit	Egress	13	19	10
III.	Transit	Ingress W.	6	12	59			II.	Eclipse	Disapp.	14	4	12 25.4
III.	Transit	Egress W.	6	15	34			II.	Occult.	Reapp.	14	8	50
I.	Occult.	Reapp. W.	6	16	12			I.	Shadow	Ingress W.	14	12	0
II.	Eclipse	Disapp.	7	1	36	54.4		I.	Transit	Ingress W.	14	13	7
IV.	Shadow	Ingress	7	3	40			I.	Shadow	Egress W.	14	14	16
IV.	Shadow	Egress	7	5	8			I.	Transit	Egress W.	14	15	20
II.	Occult.	Reapp.	7	6	27			I.	Eclipse	Disapp.	15	9	10 44.3
I.	Shadow	Ingress	7	10	6			I.	Occult.	Reapp. W.	15	12	27
I.	Transit	Ingress W.	7	11	19			II.	Shadow	Ingress	15	22	22
I.	Shadow	Egress W.	7	12	22			II.	Transit	Ingress	16	0	33
I.	Transit	Egress W.	7	13	32			II.	Shadow	Egress	16	0	57
I.	Eclipse	Disapp.	8	7	16	28.3		II.	Transit	Egress	16	2	59
I.	Occult.	Reapp. W.	8	10	39			I.	Shadow	Ingress	16	6	29
II.	Shadow	Ingress	8	19	46			I.	Transit	Ingress	16	7	34
II.	Transit	Ingress	8	22	9			I.	Shadow	Egress	16	8	45
II.	Shadow	Egress	8	22	21			I.	Transit	Egress W.	16	9	47
II.	Transit	Egress	9	0	36			III.	Eclipse	Disapp.	17	1	50 7.0
I.	Shadow	Ingress	9	4	35			I.	Eclipse	Disapp.	17	3	39 21.3
I.	Transit	Ingress	9	5	46			III.	Eclipse	Reapp.	17	4	38 0.8
I.	Shadow	Egress	9	6	51			III.	Occult.	Disapp.	17	6	10
I.	Transit	Egress	9	7	59			I.	Occult.	Reapp.	17	6	54
III.	Eclipse	Disapp.	9	21	48	53.7		III.	Occult.	Reapp.	17	8	43
III.	Eclipse	Reapp.	10	0	37	56.3		II.	Eclipse	Disapp.	17	17	30 5.5
I.	Eclipse	Disapp.	10	1	45	3.5		II.	Occult.	Reapp.	17	22	1
III.	Occult.	Disapp.	10	2	35			I.	Shadow	Ingress	18	0	57
I.	Occult.	Reapp.	10	5	6			I.	Transit	Ingress	18	2	1
III.	Occult.	Reapp.	10	5	10			I.	Shadow	Egress	18	3	13
II.	Eclipse	Disapp. W.	10	14	54	35.3		I.	Transit	Egress	18	4	14
II.	Occult.	Reapp.	10	19	39			I.	Eclipse	Disapp.	18	22	7 53.1
I.	Shadow	Ingress	10	23	3			I.	Occult.	Reapp.	19	1	21
I.	Transit	Ingress	11	0	13			II.	Shadow	Ingress W.	19	11	41
I.	Shadow	Egress	11	1	19			II.	Transit	Ingress W.	19	13	45
I.	Transit	Egress	11	2	26			II.	Shadow	Egress W.	19	14	16
I.	Eclipse	Disapp.	11	20	13	34.1		II.	Transit	Egress W.	19	16	19
I.	Occult.	Reapp.	11	23	33			I.	Shadow	Ingress	19	19	26
II.	Shadow	Ingress	12	9	4			I.	Transit	Ingress	19	20	27
II.	Transit	Ingress W.	12	11	22			I.	Shadow	Egress	19	21	41
II.	Shadow	Egress W.	12	11	39			I.	Transit	Egress	19	22	49
II.	Transit	Egress W.	12	13	48			III.	Shadow	Ingress W.	20	15	58
I.	Shadow	Ingress	12	17	32			I.	Eclipse	Disapp.	20	16	26 32.6
I.	Transit	Ingress	12	18	40			III.	Shadow	Egress	20	18	58
I.	Shadow	Egress	12	19	48			I.	Occult.	Reapp.	20	19	48
I.	Transit	Egress	12	20	53			III.	Transit	Ingress	20	20	9
III.	Shadow	Ingress W.	13	11	57			III.	Transit	Egress	20	22	42
I.	Eclipse	Disapp. W.	13	14	42	12.0		II.	Eclipse	Disapp.	21	6	47 52.2
III.	Shadow	Egress W.	13	14	58			II.	Occult.	Reapp. W.	21	11	11
III.	Transit	Ingress	13	16	36			I.	Shadow	Ingress W.	21	13	54
I.	Occult.	Reapp.	13	18	0			I.	Transit	Ingress W.	21	14	54

JUPITER'S SATELLITES, 1868. 479

WASHINGTON MEAN TIME.

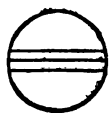
AUGUST.

I. Shadow	Egress	W.	^d 21 ^h 16 ^m 10 ^s	I. Transit	Ingress	^d 26 ^h 22 ^m 14 ^s
I. Transit	Egress		21 17 7	I. Shadow	Egress	26 23 35
I. Eclipse	Disapp.	W.	22 11 5 6.0	I. Transit	Egress	27 0 25
I. Occult.	Reapp.	W.	22 14 14	I. Eclipse	Disapp.	27 18 30 59.6
II. Shadow	Ingress		23 1 0	III. Shadow	Ingress	27 20 0
II. Transit	Ingress		23 2 55	I. Occult.	Reapp.	27 21 34
II. Shadow	Egress		23 3 33	III. Shadow	Egress	27 22 59
II. Transit	Egress		23 5 20	III. Transit	Ingress	27 23 39
I. Shadow	Ingress		23 8 23	III. Transit	Egress	28 2 9
I. Transit	Ingress	W.	23 9 21	II. Eclipse	Disapp.	W. 28 9 23 15.8
I. Shadow	Egress	W.	23 10 38	II. Occult.	Reapp.	W. 28 13 30
I. Transit	Egress	W.	23 11 34	I. Shadow	Ingress	W. 28 15 48
IV. Shadow	Ingress		23 22 8	I. Transit	Ingress	W. 28 16 40
IV. Shadow	Egress		23 23 5	I. Shadow	Egress	28 18 3
I. Eclipse	Disapp.		24 5 33 45.0	I. Transit	Egress	28 18 53
III. Eclipse	Disapp.		24 5 51 19.7	I. Eclipse	Disapp.	W. 29 12 59 35.6
III. Eclipse	Reapp.		24 8 38 4.1	I. Occult.	Reapp.	W. 29 16 0
I. Occult.	Reapp.		24 8 41	II. Shadow	Ingress	30 3 36
III. Occult.	Disapp.	W.	24 9 41	II. Transit	Ingress	30 5 15
III. Occult.	Reapp.		24 12 12	II. Shadow	Egress	30 6 10
II. Eclipse	Disapp.		24 20 5 32.0	II. Transit	Egress	30 7 40
II. Occult.	Reapp.		25 0 21	I. Shadow	Ingress	W. 30 10 17
I. Shadow	Ingress		25 2 51	I. Transit	Ingress	W. 30 11 6
I. Transit	Ingress		25 3 48	I. Shadow	Egress	W. 30 12 32
I. Shadow	Egress		25 5 6	I. Transit	Egress	W. 30 13 19
I. Transit	Egress		25 6 1	I. Eclipse	Disapp.	31 7 28 16.1
I. Eclipse	Disapp.		26 0 2 18.4	III. Eclipse	Disapp.	W. 31 9 52 30.9
I. Occult.	Reapp.		26 3 7	I. Occult.	Reapp.	W. 31 10 27
II. Shadow	Ingress	W.	26 14 18	III. Eclipse	Reapp.	W. 31 12 38 5.7
II. Transit	Ingress	W.	26 16 6	III. Occult.	Disapp.	W. 31 13 6
II. Shadow	Egress		26 16 52	III. Occult.	Reapp.	W. 31 15 37
II. Transit	Egress		26 18 31	II. Eclipse	Disapp.	31 22 40 53.6
I. Shadow	Ingress		26 21 20			

Phases of the Eclipses of the Satellites for an Inverting Telescope.

I.

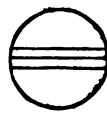
d



III.

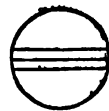
d

r



II.

d



IV. *Not Eclipsed.*

480 JUPITER'S SATELLITES, 1868.

WASHINGTON MEAN TIME.

SEPTEMBER.

			d	h	m	s				d	h	m	s
II.	Occult.	Reapp.	1	2	38		II.	Shadow	Ingress	9	19	33	
I.	Shadow	Ingress	1	4	45		II.	Transit	Ingress	9	20	43	
I.	Transit	Ingress	1	5	32		II.	Shadow	Egress	9	22	6	
I.	Shadow	Egress	1	7	0		II.	Transit	Egress	9	23	8	
I.	Transit	Egress	1	7	45		I.	Shadow	Ingress	10	1	8	
I.	Eclipse	Disapp.	2	1	56	51.3	I.	Transit	Ingress	10	1	42	
I.	Occult.	Reapp.	2	4	53		I.	Shadow	Egress	10	3	24	
II.	Shadow	Ingress W.	2	16	55		I.	Transit	Egress	10	3	55	
II.	Transit	Ingress	2	18	25		I.	Eclipse	Disapp.	10	22	20	17.0
II.	Shadow	Egress	2	19	29		I.	Occult.	Reapp.	11	1	5	
II.	Transit	Egress	2	20	50		III.	Shadow	Ingress	11	4	3	
I.	Shadow	Ingress	2	23	14		III.	Transit	Ingress	11	6	22	
I.	Transit	Ingress	2	23	58		III.	Shadow	Egress	11	7	0	
I.	Shadow	Egress	3	1	29		III.	Transit	Egress W.	11	8	53	
I.	Transit	Egress	3	2	11		II.	Eclipse	Disapp. W.	11	14	33	58.8
I.	Eclipse	Disapp.	3	20	25	34.4	II.	Occult.	Reapp.	11	18	1	
I.	Occult.	Reapp.	3	23	20		I.	Shadow	Ingress	11	19	37	
III.	Shadow	Ingress	4	0	2		I.	Transit	Ingress	11	20	8	
III.	Shadow	Egress	4	3	0		I.	Shadow	Egress	11	21	52	
III.	Transit	Ingress	4	3	2		I.	Transit	Egress	11	22	21	
III.	Transit	Egress	4	5	33		I.	Eclipse	Disapp. W.	12	16	48	56.6
II.	Eclipse	Disapp. W.	4	11	58	37.7	I.	Occult.	Reapp.	12	19	31	
II.	Occult.	Reapp. W.	4	15	46		II.	Shadow	Ingress W.	13	8	51	
I.	Shadow	Ingress	4	17	42		II.	Transit	Ingress W.	13	9	51	
I.	Transit	Ingress	4	18	24		II.	Shadow	Egress W.	13	11	24	
I.	Shadow	Egress	4	19	57		II.	Transit	Egress W.	13	12	16	
I.	Transit	Egress	4	20	37		I.	Shadow	Ingress W.	13	14	5	
I.	Eclipse	Disapp. W.	5	14	54	12.3	I.	Transit	Ingress W.	13	14	34	
I.	Occult.	Reapp.	5	17	46		I.	Shadow	Egress W.	13	16	20	
II.	Shadow	Ingress	6	6	13		I.	Transit	Egress W.	13	16	47	
II.	Transit	Ingress	6	7	34		I.	Eclipse	Disapp. W.	14	11	17	41.3
II.	Shadow	Egress W.	6	8	47		I.	Occult.	Reapp. W.	14	13	57	
II.	Transit	Egress W.	6	10	0		III.	Eclipse	Disapp.	14	17	56	5.1
I.	Shadow	Ingress W.	6	12	11		III.	Occult.	Reapp.	14	22	19	
I.	Transit	Ingress W.	6	12	50		II.	Eclipse	Disapp.	15	3	51	39.7
I.	Shadow	Egress W.	6	14	26		II.	Occult.	Reapp.	15	7	8	
I.	Transit	Egress W.	6	15	3		I.	Shadow	Ingress W.	15	8	34	
I.	Eclipse	Disapp. W.	7	9	22	54.9	I.	Transit	Ingress W.	15	9	0	
I.	Occult.	Reapp. W.	7	12	12		I.	Shadow	Egress W.	15	10	49	
III.	Eclipse	Disapp. W.	7	13	53	57.1	I.	Transit	Egress W.	15	11	13	
III.	Occult.	Reapp.	7	18	59		I.	Eclipse	Disapp.	16	5	46	19.3
II.	Eclipse	Disapp.	8	1	16	18.0	I.	Occult.	Reapp. W.	16	8	23	
II.	Occult.	Reapp.	8	4	54		II.	Shadow	Ingress	16	22	10	
I.	Shadow	Ingress	8	6	39		II.	Transit	Ingress	16	22	59	
I.	Transit	Ingress	8	7	16		II.	Shadow	Egress	17	0	43	
I.	Shadow	Egress W.	8	8	55		II.	Transit	Egress	17	1	24	
I.	Transit	Egress W.	8	9	29		I.	Shadow	Ingress	17	3	2	
I.	Eclipse	Disapp.	9	3	51	31.8	I.	Transit	Ingress	17	3	26	
I.	Occult.	Reapp.	9	6	38		I.	Shadow	Egress	17	5	17	

JUPITER'S SATELLITES, 1868. 481

WASHINGTON MEAN TIME.

SEPTEMBER.

		d	h	m	s			d	h	m	s
I.	Transit	Egress	17	5	39		I.	Shadow	Ingress	24	4 57
I.	Eclipse	Disapp.	18	0	15	7.4	I.	Transit	Ingress	24	5 10
I.	Occult.	Reapp.	18	2	49		I.	Shadow	Egress W.	24	7 12
III.	Shadow	Ingress W.	18	8	4		I.	Transit	Egress W.	24	7 23
III.	Transit	Ingress W.	18	9	39		I.	Eclipse	Disapp.	25	2 10 6.1
III.	Shadow	Egress W.	18	11	0		I.	Occult.	Reapp.	25	4 33
III.	Transit	Egress W.	18	12	11		III.	Shadow	Ingress W.	25	12 5
II.	Eclipse	Disapp. W.	18	17	9	20.6	III.	Transit	Ingress W.	25	12 53
II.	Occult.	Reapp.	18	20	15		III.	Shadow	Egress W.	25	15 0
I.	Shadow	Ingress	18	21	31		III.	Transit	Egress W.	25	15 27
I.	Transit	Ingress	18	21	52		II.	Eclipse	Disapp.	25	19 44 44.0
I.	Shadow	Egress	18	23	46		II.	Occult.	Reapp.	25	22 27
I.	Transit	Egress	19	0	5		I.	Shadow	Ingress	25	23 26
I.	Eclipse	Disapp.	19	18	43	49.0	I.	Transit	Ingress	25	23 36
I.	Occult.	Reapp.	19	21	15		I.	Shadow	Egress	26	1 41
II.	Shadow	Ingress W.	20	11	29		I.	Transit	Egress	26	1 49
II.	Transit	Ingress W.	20	12	7		I.	Eclipse	Disapp.	26	20 38 49.9
II.	Shadow	Egress W.	20	14	2		I.	Occult.	Reapp.	26	22 59
II.	Transit	Egress W.	20	14	32		II.	Shadow	Ingress W.	27	14 7
I.	Shadow	Ingress W.	20	16	0		II.	Transit	Ingress W.	27	14 22
I.	Transit	Ingress W.	20	16	18		II.	Shadow	Egress W.	27	16 39
I.	Shadow	Egress	20	18	15		II.	Transit	Egress W.	27	16 48
I.	Transit	Egress	20	18	31		I.	Shadow	Ingress	27	17 54
I.	Eclipse	Disapp. W.	21	13	12	36.0	I.	Transit	Ingress	27	18 2
I.	Occult.	Reapp. W.	21	15	41		I.	Shadow	Egress	27	20 9
III.	Eclipse	Disapp.	21	21	58	5.5	I.	Transit	Egress	27	20 15
III.	Occult.	Reapp.	22	1	37		I.	Eclipse	Disapp. W.	28	15 7 39.3
II.	Eclipse	Disapp.	22	6	27	2.7	I.	Occult.	Reapp. W.	28	17 24
II.	Occult.	Reapp. W.	22	9	21		III.	Eclipse	Disapp.	29	2 0 41.8
I.	Shadow	Ingress W.	22	10	29		III.	Occult.	Reapp.	29	4 53
I.	Transit	Ingress W.	22	10	44		II.	Eclipse	Disapp. W.	29	9 2 27.6
I.	Shadow	Egress W.	22	12	44		II.	Occult.	Reapp. W.	29	11 33
I.	Transit	Egress W.	22	12	57		I.	Shadow	Ingress W.	29	12 23
I.	Eclipse	Disapp. W.	23	7	41	16.6	I.	Transit	Ingress W.	29	12 27
I.	Occult.	Reapp. W.	23	10	7		I.	Shadow	Egress W.	29	14 38
II.	Shadow	Ingress	24	0	48		I.	Transit	Egress W.	29	14 40
II.	Transit	Ingress	24	1	15		I.	Eclipse	Disapp. W.	30	9 36 22.0
II.	Shadow	Egress	24	3	21		I.	Occult.	Reapp. W.	30	11 50
II.	Transit	Egress	24	3	40						

482 JUPITER'S SATELLITES, 1868.

WASHINGTON MEAN TIME.

SEPTEMBER.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

I.

III.

II.

IV. *Not Eclipsed.*

OCTOBER.

			d	h	m				d	h	m	s	
II.	Shadow	Ingress	1	3	26	I.	Occult.	Disapp. W.	5	16	35		
II.	Transit	Ingress	1	3	30	I.	Eclipse	Reapp.	5	19	13	28.2	
II.	Transit	Egress	1	5	56	III.	Occult.	Disapp.	6	5	33		
II.	Shadow	Egress	1	5	59	III.	Eclipse	Reapp. W.	6	8	42	29.0	
I.	Shadow	Ingress	1	6	52	II.	Occult.	Disapp. W.	6	11	21		
I.	Transit	Ingress	1	6	53	II.	Eclipse	Reapp. W.	6	14	3	7.0	
I.	Transit	Egress W.	1	9	6	I.	Transit	Ingress W.	6	14	10		
I.	Shadow	Egress W.	1	9	7	I.	Shadow	Ingress W.	6	14	17		
I.	Occult.	Disapp.	2	4	3	I.	Transit	Egress W.	6	16	23		
I.	Eclipse	Reapp.	2	6	15	52.6	I.	Shadow	Egress W.	6	16	32	
III.	Transit	Ingress W.	2	16	7	I.	Occult.	Disapp. W.	7	11	21		
III.	Shadow	Ingress W.	2	16	7	I.	Eclipse	Reapp. W.	7	13	42	11.8	
III.	Transit	Egress	2	18	43	II.	Transit	Ingress	8	5	46		
III.	Shadow	Egress	2	19	0	II.	Shadow	Ingress	8	6	5		
II.	Occult.	Disapp.	2	22	15	II.	Transit	Egress W.	8	8	12		
II.	Eclipse	Reapp.	3	0	45	34.7	II.	Shadow	Egress W.	8	8	36	
I.	Transit	Ingress	3	1	18	I.	Transit	Ingress W.	8	8	36		
I.	Shadow	Ingress	3	1	20	I.	Shadow	Ingress W.	8	8	46		
I.	Transit	Egress	3	3	32	I.	Transit	Egress W.	8	10	49		
I.	Shadow	Egress	3	3	35	I.	Shadow	Egress W.	8	11	1		
I.	Occult.	Disapp.	3	22	29	I.	Occult.	Disapp.	9	5	47		
I.	Eclipse	Reapp.	4	0	44	39.7	I.	Eclipse	Reapp. W.	9	8	11	4.6
II.	Transit	Ingress W.	4	16	37	III.	Transit	Ingress	9	19	22		
II.	Shadow	Ingress W.	4	16	45	III.	Shadow	Ingress	9	20	9		
II.	Transit	Egress	4	19	4	III.	Transit	Egress	9	22	0		
II.	Shadow	Egress	4	19	19	III.	Shadow	Egress	9	23	1		
I.	Transit	Ingress	4	19	44	II.	Occult.	Disapp.	10	0	28		
I.	Shadow	Ingress	4	19	48	I.	Transit	Ingress	10	3	2		
I.	Transit	Egress	4	21	57	I.	Shadow	Ingress	10	3	15		
I.	Shadow	Egress	4	22	3	II.	Eclipse	Reapp.	10	3	20	38.8	

JUPITER'S SATELLITES, 1868. 483

WASHINGTON MEAN TIME.

OCTOBER.

		d	h	m	s			d	h	m	s
I.	Transit	Egress	10	5	15	I.	Shadow	Ingress	18	23	38
I.	Shadow	Egress	10	5	30	II.	Transit	Egress	18	23	38
I.	Occult.	Disapp.	11	0	13	II.	Shadow	Egress	19	0	33
I.	Eclipse	Reapp.	11	2	39 51.3	I.	Transit	Egress	19	1	25
II.	Transit	Ingress	11	18	53	I.	Shadow	Egress	19	1	53
II.	Shadow	Ingress	11	19	23	I.	Occult.	Disapp.	19	20	23
II.	Transit	Egress	11	21	20	I.	Eclipse	Reapp.	19	23	4 7.5
I.	Transit	Ingress	11	21	28	III.	Occult.	Disapp. W.	20	12	5
I.	Shadow	Ingress	11	21	44	II.	Occult.	Disapp. W.	20	15	48
II.	Shadow	Egress	11	21	55	III.	Eclipse	Reapp.	20	16	44 23.8
I.	Transit	Egress	11	23	41	I.	Transit	Ingress	20	17	38
I.	Shadow	Egress	11	23	59	I.	Shadow	Ingress	20	18	7
I.	Occult.	Disapp.	12	18	39	II.	Eclipse	Reapp.	20	19	13 26.4
I.	Eclipse	Reapp.	12	21	8 45.2	I.	Transit	Egress	20	19	51
III.	Occult.	Disapp. W.	13	8	48	I.	Shadow	Egress	20	20	22
III.	Eclipse	Reapp. W.	13	12	43 25.0	I.	Occult.	Disapp. W.	21	14	49
II.	Occult.	Disapp. W.	13	13	35	I.	Eclipse	Reapp.	21	17	32 54.5
I.	Transit	Ingress W.	13	15	54	II.	Transit	Ingress W.	22	10	19
I.	Shadow	Ingress W.	13	16	12	II.	Shadow	Ingress W.	22	11	22
II.	Eclipse	Reapp.	13	16	38 13.7	I.	Transit	Ingress W.	22	12	4
I.	Transit	Egress	13	18	7	I.	Shadow	Ingress W.	22	12	36
I.	Shadow	Egress	13	18	27	II.	Transit	Egress W.	22	12	47
I.	Occult.	Disapp. W.	14	13	5	II.	Shadow	Egress W.	22	13	53
I.	Eclipse	Reapp. W.	14	15	37 29.4	I.	Transit	Egress W.	22	14	18
II.	Transit	Ingress W.	15	8	2	I.	Shadow	Egress W.	22	14	51
II.	Shadow	Ingress W.	15	8	43	I.	Occult.	Disapp. W.	23	9	15
I.	Transit	Ingress W.	15	10	20	I.	Eclipse	Reapp. W.	23	12	1 51.1
II.	Transit	Egress W.	15	10	29	III.	Transit	Ingress	24	1	56
I.	Shadow	Ingress W.	15	10	41	III.	Shadow	Ingress	24	4	14
II.	Shadow	Egress W.	15	11	15	III.	Transit	Egress	24	4	39
I.	Transit	Egress W.	15	12	33	II.	Occult.	Disapp.	24	4	55
I.	Shadow	Egress W.	15	12	56	I.	Transit	Ingress W.	24	6	30
I.	Occult.	Disapp. W.	16	7	31	III.	Shadow	Egress W.	24	7	4
I.	Eclipse	Reapp. W.	16	10	6 24.2	I.	Shadow	Ingress W.	24	7	4
III.	Transit	Ingress	16	22	88	II.	Eclipse	Reapp. W.	24	8	31 4.6
III.	Shadow	Ingress	17	0	11	I.	Transit	Egress W.	24	8	44
III.	Transit	Egress	17	1	18	I.	Shadow	Egress W.	24	9	19
II.	Occult.	Disapp.	17	2	41	I.	Occult.	Disapp.	25	3	41
III.	Shadow	Egress	17	3	2	I.	Eclipse	Reapp.	25	6	30 41.6
I.	Transit	Ingress	17	4	46	II.	Transit	Ingress	25	23	28
I.	Shadow	Ingress	17	5	9	II.	Shadow	Ingress	26	0	41
II.	Eclipse	Reapp.	17	5	55 48.7	I.	Transit	Ingress	26	0	56
I.	Transit	Egress W.	17	6	59	I.	Shadow	Ingress	26	1	33
I.	Shadow	Egress W.	17	7	24	II.	Transit	Egress	26	1	56
I.	Occult.	Disapp.	18	1	57	I.	Transit	Egress	26	3	10
I.	Eclipse	Reapp.	18	4	35 12.7	II.	Shadow	Egress	26	3	12
II.	Transit	Ingress	18	21	10	I.	Shadow	Egress	26	3	48
II.	Shadow	Ingress	18	22	22	I.	Occult.	Disapp.	26	22	8
I.	Transit	Ingress	18	23	12	I.	Eclipse	Reapp.	27	0	59 38.6




484 JUPITER'S SATELLITES, 1868.

WASHINGTON MEAN TIME.

OCTOBER.

III. Occult.	Disapp.	d h m s	27 15 24	II. Transit	Egress W.	d h m s	29 15 7
II. Occult.	Disapp.		27 18 3	I. Transit	Egress		29 16 2
III. Occult.	Reapp.		27 18 8	II. Shadow	Egress		29 16 31
III. Eclipse	Disapp.		27 18 9 32.8	I. Shadow	Egress		29 16 45
I. Transit	Ingress		27 19 22	I. Occult.	Disapp. W.		30 11 1
I. Shadow	Ingress		27 20 2	I. Eclipse	Reapp. W.		30 13 57 25.3
III. Eclipse	Reapp.		27 20 45 37.2	III. Transit	Ingress		31 5 17
I. Transit	Egress		27 21 36	II. Occult.	Disapp. W.		31 7 12
II. Eclipse	Reapp.		27 21 48 45.2	III. Transit	Egress W.		31 8 2
I. Shadow	Egress		27 22 17	I. Transit	Ingress W.		31 8 15
I. Occult.	Disapp.		28 16 34	III. Shadow	Ingress W.		31 8 16
I. Eclipse	Reapp.		28 19 28 27.3	I. Shadow	Ingress W.		31 8 59
II. Transit	Ingress W.		29 12 38	I. Transit	Egress W.		31 10 29
I. Transit	Ingress W.		29 13 48	III. Shadow	Egress W.		31 11 4
II. Shadow	Ingress W.		29 14 0	II. Eclipse	Reapp. W.		31 11 6 27.1
I. Shadow	Ingress W.		29 14 30	I. Shadow	Egress W.		31 11 14

Phases of the Eclipses of the Satellites for an Inverting Telescope.

I. 	III. 
II. 	IV. <i>Not Eclipsed.</i>

NOVEMBER.

I. Occult.	Disapp.	d h m s	1 5 28	II. Occult.	Disapp.	d h m s	3 20 21
I. Eclipse	Reapp. W.		1 8 26 17.5	I. Transit	Ingress		3 21 8
II. Transit	Ingress		2 1 48	III. Occult.	Reapp.		3 21 35
I. Transit	Ingress		2 2 42	I. Shadow	Ingress		3 21 56
II. Shadow	Ingress		2 3 19	III. Eclipse	Disapp.		3 22 12 38.9
I. Shadow	Ingress		2 3 28	I. Transit	Egress		3 23 22
II. Transit	Egress		2 4 17	I. Shadow	Egress		4 0 11
I. Transit	Egress		2 4 56	II. Eclipse	Reapp.		4 0 24 10.7
I. Shadow	Egress		2 5 43	III. Eclipse	Reapp.		4 0 47 30.9
II. Shadow	Egress		2 5 50	I. Occult.	Disapp.		4 18 21
I. Occult.	Disapp.		2 23 54	I. Eclipse	Reapp.		4 21 24 6.2
I. Eclipse	Reapp.		3 2 55 15.9	II. Transit	Ingress		5 14 58
III. Occult.	Disapp.		3 18 48	I. Transit	Ingress		5 15 34

JUPITER'S SATELLITES, 1868. 485

WASHINGTON MEAN TIME.

NOVEMBER.

			^d	^h	^m	^s				^d	^h	^m	^s
I.	Shadow	Ingress	5	16	25		II.	Shadow	Egress	12	21	49	
II.	Shadow	Ingress	5	16	39		I.	Occult.	Disapp.	13	14	36	
II.	Transit	Egress	5	17	29		I.	Eclipse	Reapp.	13	17	48	50.9
I.	Transit	Egress	5	17	48		I.	Transit	Ingress W.	14	11	49	
I.	Shadow	Egress	5	18	40		II.	Occult.	Disapp. W.	14	11	50	
II.	Shadow	Egress	5	19	10		III.	Transit	Ingress W.	14	12	11	
I.	Occult.	Disapp. W.	6	12	48		I.	Shadow	Ingress W.	14	12	49	
I.	Eclipse	Reapp.	6	15	52	5.5	I.	Transit	Egress	14	14	4	
III.	Transit	Ingress W.	7	8	42		III.	Transit	Egress	14	15	2	
II.	Occult.	Disapp. W.	7	9	30		I.	Shadow	Egress	14	15	4	
I.	Transit	Ingress W.	7	10	1		II.	Occult.	Reapp.	14	16	17	32.9
I.	Shadow	Ingress W.	7	10	54		III.	Shadow	Ingress	14	16	20	
III.	Transit	Egress W.	7	11	30		III.	Shadow	Egress	14	19	6	
I.	Transit	Egress W.	7	12	15		I.	Occult.	Disapp. W.	15	9	3	
III.	Shadow	Ingress W.	7	12	18		I.	Eclipse	Reapp. W.	15	12	17	45.6
I.	Shadow	Egress W.	7	13	9		I.	Transit	Ingress W.	16	6	16	
II.	Eclipse	Reapp. W.	7	13	41	56.1	II.	Transit	Ingress W.	16	6	33	
III.	Shadow	Egress	7	15	5		I.	Shadow	Ingress W.	16	7	18	
I.	Occult.	Disapp. W.	8	7	15		I.	Transit	Egress W.	16	8	31	
I.	Eclipse	Reapp. W.	8	10	21	59.1	II.	Shadow	Ingress W.	16	8	38	
II.	Transit	Ingress	9	4	9		II.	Transit	Egress W.	16	9	5	
I.	Transit	Ingress	9	4	28		I.	Shadow	Egress W.	16	9	33	
I.	Shadow	Ingress	9	5	23		II.	Shadow	Egress W.	16	11	7	
II.	Shadow	Ingress	9	5	58		I.	Occult.	Disapp.	17	3	30	
II.	Transit	Egress W.	9	6	40		I.	Eclipse	Reapp. W.	17	6	46	46.6
I.	Transit	Egress W.	9	6	42		I.	Transit	Ingress	18	0	43	
I.	Shadow	Egress W.	9	7	38		II.	Occult.	Disapp.	18	1	1	
II.	Shadow	Egress W.	9	8	29		I.	Shadow	Ingress	18	1	47	
I.	Occult.	Disapp.	10	1	42		III.	Occult.	Disapp.	18	1	49	
I.	Eclipse	Reapp.	10	4	50	58.9	I.	Transit	Egress	18	2	58	
III.	Occult.	Disapp.	10	22	16		I.	Shadow	Egress	18	4	2	
II.	Occult.	Disapp.	10	22	40		III.	Occult.	Reapp.	18	4	40	
I.	Transit	Ingress	10	22	55		II.	Eclipse	Reapp.	18	5	35	23.4
I.	Shadow	Ingress	10	23	52		III.	Eclipse	Disapp. W.	18	6	18	59.3
III.	Occult.	Reapp.	11	1	5		III.	Eclipse	Reapp. W.	18	8	51	26.1
I.	Transit	Egress	11	1	9		I.	Occult.	Disapp.	18	21	58	
I.	Shadow	Egress	11	2	7		I.	Eclipse	Reapp.	19	1	15	39.5
III.	Eclipse	Disapp.	11	2	15	34.3	I.	Transit	Ingress	19	19	10	
II.	Eclipse	Reapp.	11	2	59	43.2	II.	Transit	Ingress	19	19	47	
III.	Eclipse	Reapp.	11	4	49	13.7	I.	Shadow	Ingress	19	20	16	
I.	Occult.	Disapp.	11	20	9		I.	Transit	Egress	19	21	25	
I.	Eclipse	Reapp.	11	23	19	50.5	II.	Shadow	Ingress	19	21	58	
II.	Transit	Ingress	12	17	22		II.	Transit	Egress	19	22	18	
I.	Transit	Ingress	12	17	22		I.	Shadow	Egress	19	22	31	
I.	Shadow	Ingress	12	18	21		II.	Shadow	Egress	20	0	27	
II.	Shadow	Ingress	12	19	19		I.	Occult.	Disapp.	20	16	25	
I.	Transit	Egress	12	19	37		I.	Eclipse	Reapp.	20	19	44	40.9
II.	Transit	Egress	12	19	52		I.	Transit	Ingress	21	13	37	
I.	Shadow	Egress	12	20	36		II.	Occult.	Disapp.	21	14	13	

486 JUPITER'S SATELLITES, 1868.

WASHINGTON MEAN TIME.

NOVEMBER.

			d	h	m	s				d	h	m	s
I.	Shadow	Ingress	21	14	45			I.	Eclipse	Reapp.	26	3	11 32.6
III.	Transit	Ingress	21	15	46			I.	Transit	Ingress	26	20	59
I.	Transit	Egress	21	15	52			I.	Shadow	Ingress	26	22	12
I.	Shadow	Egress	21	17	0			II.	Transit	Ingress	26	22	14
III.	Transit	Egress	21	18	38			I.	Transit	Egress	26	23	14
II.	Eclipse	Reapp.	21	18	53	16.9		I.	Shadow	Egress	27	0	36
III.	Shadow	Ingress	21	20	22			II.	Shadow	Ingress	27	0	37
III.	Shadow	Egress	21	23	8			II.	Transit	Egress	27	0	47
I.	Occult.	Disapp. W.	22	10	53			II.	Shadow	Egress	27	3	6
I.	Eclipse	Reapp.	22	14	13	36.8		I.	Occult.	Disapp.	27	18	16
I.	Transit	Ingress W.	23	8	5			I.	Eclipse	Reapp.	27	21	40 34.5
II.	Transit	Ingress W.	23	9	0			I.	Transit	Ingress	28	15	27
I.	Shadow	Ingress W.	23	9	14			II.	Occult.	Disapp.	28	16	39
I.	Transit	Egress W.	23	10	20			I.	Shadow	Ingress	28	16	41
II.	Shadow	Ingress W.	23	11	17			I.	Transit	Egress	28	17	42
I.	Shadow	Egress W.	23	11	29			I.	Shadow	Egress	28	18	55
II.	Transit	Egress W.	23	11	32			III.	Transit	Ingress	28	19	26
II.	Shadow	Egress	23	13	46			II.	Eclipse	Reapp.	28	21	29 8.3
I.	Occult.	Disapp.	24	5	20			III.	Transit	Egress	28	22	21
I.	Eclipse	Reapp. W.	24	8	42	38.7		III.	Shadow	Ingress	29	0	25
I.	Transit	Ingress	25	2	32			III.	Shadow	Egress	29	3	9
II.	Occult.	Disapp.	25	3	25			I.	Occult.	Disapp. W.	29	12	44
I.	Shadow	Ingress	25	3	43			I.	Eclipse	Reapp.	29	16	9 31.0
I.	Transit	Egress	25	4	47			I.	Transit	Ingress W.	30	9	55
III.	Occult.	Disapp.	25	5	27			I.	Shadow	Ingress W.	30	11	10
I.	Shadow	Egress W.	25	5	58			II.	Transit	Ingress W.	30	11	29
II.	Eclipse	Reapp. W.	25	8	11	10.7		I.	Transit	Egress W.	30	12	10
III.	Occult.	Reapp. W.	25	8	20			I.	Shadow	Egress	30	13	24
III.	Eclipse	Disapp. W.	25	10	21	51.5		II.	Shadow	Ingress	30	13	56
III.	Eclipse	Reapp. W.	25	12	53	5.7		II.	Transit	Egress	30	14	1
I.	Occult.	Disapp.	25	23	48			II.	Shadow	Egress	30	16	23

Phases of the Eclipses of the Satellites for an Inverting Telescope.

I.



III.



II.



IV. *Not Eclipsed.*

JUPITER'S SATELLITES, 1868. 487

WASHINGTON MEAN TIME.

DECEMBER.

			d	h	m	s				d	h	m	s
I. Occult.	Disapp. W.		1	7	12			I. Eclipse	Reapp.	8	12	34	29.6
I. Eclipse	Reapp. W.		1	10	38	33.3		I. Transit	Ingress W.	9	6	15	
I. Transit	Ingress		2	4	23			I. Shadow	Ingress W.	9	7	34	
I. Shadow	Ingress W.		2	5	39			II. Occult.	Disapp. W.	9	8	21	
II. Occult.	Disapp. W.		2	5	52			I. Transit	Egress W.	9	8	31	
I. Transit	Egress W.		2	6	38			I. Shadow	Egress W.	9	9	48	
I. Shadow	Egress W.		2	7	53			II. Occult.	Reapp. W.	9	10	55	
II. Occult.	Reapp. W.		2	8	24			II. Eclipse	Disapp. W.	9	11	1	17.1
II. Eclipse	Disapp. W.		2	8	24	55.8		III. Occult.	Disapp.	9	12	57	
III. Occult.	Disapp. W.		2	9	10			II. Eclipse	Reapp.	9	13	23	8.7
II. Eclipse	Reapp. W.		2	10	47	5.6		III. Occult.	Reapp.	9	15	54	
III. Occult.	Reapp. W.		2	12	5			III. Eclipse	Disapp.	9	18	27	23.3
III. Eclipse	Disapp.		2	14	24	37.9		III. Eclipse	Reapp.	9	20	56	12.1
III. Eclipse	Reapp.		2	16	54	39.3		I. Occult.	Disapp.	10	3	33	
I. Occult.	Disapp.		3	1	40			I. Eclipse	Reapp. W.	10	7	3	24.5
I. Eclipse	Reapp.		3	5	7	27.7		I. Transit	Ingress	11	0	43	
I. Transit	Ingress		3	22	51			I. Shadow	Ingress	11	2	3	
I. Shadow	Ingress		4	0	8			I. Transit	Egress	11	2	59	
II. Transit	Ingress		4	0	44			II. Transit	Ingress	11	3	17	
I. Transit	Egress		4	1	7			I. Shadow	Egress	11	4	17	
I. Shadow	Egress		4	2	22			II. Transit	Egress W.	11	5	50	
II. Shadow	Ingress		4	3	16			II. Shadow	Ingress W.	11	5	55	
II. Transit	Egress		4	3	17			II. Shadow	Egress W.	11	8	23	
II. Shadow	Egress W.		4	5	45			I. Occult.	Disapp.	11	22	1	
I. Occult.	Disapp.		4	20	8			I. Eclipse	Reapp.	12	1	32	26.7
I. Eclipse	Reapp.		4	23	36	29.8		I. Transit	Ingress	12	19	11	
I. Transit	Ingress		5	17	19			I. Shadow	Ingress	12	20	32	
I. Shadow	Ingress		5	18	36			I. Transit	Egress	12	21	27	
II. Occult.	Disapp.		5	19	6			II. Occult.	Disapp.	12	21	37	
I. Transit	Egress		5	19	35			I. Shadow	Egress	12	22	46	
I. Shadow	Egress		5	20	50			II. Occult.	Reapp.	13	0	10	
II. Occult.	Reapp.		5	21	39			II. Eclipse	Disapp.	13	0	19	31.0
II. Eclipse	Disapp.		5	21	43	6.7		II. Eclipse	Reapp.	13	2	41	13.6
III. Transit	Ingress		5	23	12			III. Transit	Ingress	13	3	3	
II. Eclipse	Reapp.		6	0	5	7.3		III. Transit	Egress W.	13	6	0	
III. Transit	Egress		6	2	8			III. Shadow	Ingress W.	13	8	31	
III. Shadow	Ingress		6	4	28			III. Shadow	Egress W.	13	11	13	
III. Shadow	Egress W.		6	7	11			I. Occult.	Disapp.	13	16	30	
I. Occult.	Disapp.		6	14	36			I. Eclipse	Reapp.	13	20	1	23.9
I. Eclipse	Reapp.		6	18	5	26.6		I. Transit	Ingress	14	14	30	
I. Transit	Ingress W.		7	11	47			I. Shadow	Ingress	14	15	1	
I. Shadow	Ingress		7	13	5			I. Transit	Egress	14	15	56	
II. Transit	Ingress		7	14	0			II. Transit	Ingress	14	16	34	
I. Transit	Egress		7	14	3			I. Shadow	Egress	14	17	15	
I. Shadow	Egress		7	15	19			II. Transit	Egress	14	19	7	
II. Transit	Egress		7	16	33			II. Shadow	Ingress	14	19	41	
II. Shadow	Ingress		7	16	35			II. Shadow	Egress	14	21	42	
II. Shadow	Egress		7	19	4			I. Occult.	Disapp. W.	15	10	58	
I. Occult.	Disapp. W.		8	9	4			I. Eclipse	Reapp.	15	14	30	26.7

488 JUPITER'S SATELLITES, 1868.

WASHINGTON MEAN TIME.

DECEMBER.

					d	h	m	s						d	h	m	s
I.	Transit	Ingress	W.	16	8	8			I.	Shadow	Ingress	W.	23	11	25		
I.	Shadow	Ingress	W.	16	9	29			I.	Transit	Egress		23	12	18		
I.	Transit	Egress	W.	16	10	24			II.	Occult.	Disapp.		23	13	28		
II.	Occult.	Disapp.	W.	16	10	53			I.	Shadow	Egress		23	13	39		
I.	Shadow	Egress	W.	16	11	43			II.	Occult.	Reapp.		23	16	2		
II.	Occult.	Reapp.		16	13	27			II.	Eclipse	Disapp.		23	16	14	20.2	
II.	Eclipse	Disapp.		16	13	37	45.2		II.	Eclipse	Reapp.		23	18	35	36.6	
II.	Eclipse	Reapp.		16	15	59	19.0		III.	Occult.	Disapp.		23	20	50		
III.	Occult.	Disapp.		16	16	51			III.	Occult.	Reapp.		23	23	48		
III.	Occult.	Reapp.		16	19	49			III.	Eclipse	Disapp.		24	2	33	44.9	
III.	Eclipse	Disapp.		16	22	30	16.4		III.	Eclipse	Reapp.		24	5	0	9.1	
III.	Eclipse	Reapp.		17	0	57	52.8		I.	Occult.	Disapp.	W.	24	7	22		
I.	Occult.	Disapp.	W.	17	5	26			I.	Eclipse	Reapp.	W.	24	10	55	18.4	
I.	Eclipse	Reapp.	W.	17	8	59	21.9		I.	Transit	Ingress		25	4	32		
I.	Transit	Ingress		18	2	36			I.	Shadow	Ingress	W.	25	5	54		
I.	Shadow	Ingress		18	3	58			I.	Transit	Egress	W.	25	6	47		
I.	Transit	Egress		18	4	52			I.	Shadow	Egress	W.	25	8	8		
II.	Transit	Ingress	W.	18	5	52			II.	Transit	Ingress	W.	25	8	29		
I.	Shadow	Egress	W.	18	6	12			II.	Transit	Egress	W.	25	11	3		
II.	Transit	Egress	W.	18	8	26			II.	Shadow	Ingress	W.	25	11	13		
II.	Shadow	Ingress	W.	18	8	34			II.	Shadow	Egress		25	13	41		
II.	Shadow	Egress	W.	18	11	2			I.	Occult.	Disapp.		26	1	51		
I.	Occult.	Disapp.		18	23	55			I.	Eclipse	Reapp.	W.	26	5	24	20.0	
I.	Eclipse	Reapp.		19	3	26	23.8		I.	Transit	Ingress		26	23	1		
I.	Transit	Ingress		19	21	5			I.	Shadow	Ingress		27	0	23		
I.	Shadow	Ingress		19	22	27			I.	Transit	Egress		27	1	16		
I.	Transit	Egress		19	23	21			I.	Shadow	Egress		27	2	37		
II.	Occult.	Disapp.		20	0	10			II.	Occult.	Disapp.		27	2	46		
I.	Shadow	Egress		20	0	41			II.	Occult.	Reapp.		27	5	20		
II.	Occult.	Reapp.		20	2	44			II.	Eclipse	Disapp.	W.	27	5	32	40.3	
II.	Eclipse	Disapp.		20	2	56	2.0		II.	Eclipse	Reapp.	W.	27	7	53	48.1	
II.	Eclipse	Reapp.		20	5	17	27.0		III.	Transit	Ingress	W.	27	10	59		
III.	Transit	Ingress	W.	20	6	58			III.	Transit	Egress		27	13	57		
III.	Transit	Egress	W.	20	9	57			III.	Shadow	Ingress		27	16	36		
III.	Shadow	Ingress		20	12	33			III.	Shadow	Egress		27	19	16		
III.	Shadow	Egress		20	15	14			I.	Occult.	Disapp.		27	20	20		
I.	Occult.	Disapp.		20	18	24			I.	Eclipse	Reapp.		27	23	53	16.7	
I.	Eclipse	Reapp.		20	21	57	20.8		I.	Transit	Ingress		28	17	30		
I.	Transit	Ingress		21	15	34			I.	Shadow	Ingress		28	18	52		
I.	Shadow	Ingress		21	16	56			I.	Transit	Egress		28	19	45		
I.	Transit	Egress		21	17	50			I.	Shadow	Egress		28	21	6		
I.	Shadow	Egress		21	19	10			II.	Transit	Ingress		28	21	49		
II.	Transit	Ingress		21	19	10			II.	Transit	Egress		29	0	23		
II.	Transit	Egress		21	21	44			II.	Shadow	Ingress		29	0	32		
II.	Shadow	Ingress		21	21	53			II.	Shadow	Egress		29	3	0		
II.	Shadow	Egress		22	0	21			I.	Occult.	Disapp.		29	14	49		
I.	Occult.	Disapp.		22	12	53			I.	Eclipse	Reapp.		29	18	22	18.9	
I.	Eclipse	Reapp.		22	16	26	23.3		I.	Transit	Ingress		30	11	59		
I.	Transit	Ingress	W.	23	10	3			I.	Shadow	Ingress		30	13	21		

JUPITER'S SATELLITES, 1868. 489

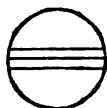
WASHINGTON MEAN TIME.

DECEMBER.

I. Transit	Egress	^d 30 ^h 14 ^m 14 ^s	III. Occult.	Disapp.	^d 31 ^h 0 ^m 53 ^s
I. Shadow	Egress	30 15 35	III. Occult.	Reapp.	31 3 52
II. Occult.	Disapp.	30 16 4	III. Eclipse	Disapp. W.	31 6 36 52.6
II. Occult.	Reapp.	30 18 38	III. Eclipse	Reapp. W.	31 9 2 4.6
II. Eclipse	Disapp.	30 18 51 3.2	I. Occult.	Disapp. W.	31 9 18
II. Eclipse	Reapp.	30 21 12 2.4	I. Eclipse	Reapp.	31 12 51 14.0

Phases of the Eclipses of the Satellites for an Inverting Telescope.

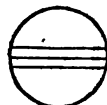
I.



r



III.



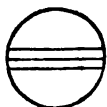
d



r



II.



d



r



IV. *Not Eclipsed.*

490 JUPITER'S SATELLITES, 1868.

WASHINGTON MEAN TIME OF GEOCENTRIC SUPERIOR CONJUNCTION. \

SATELLITE I.

		h	m			h	m			h	m			h	m
Jan.	1	20	14.2	May	18	23	38.4	Aug.	3	2	10.6	Oct.	18	3	3.9
	3	14	44.3		20	18	8.1		4	20	37.8		19	21	30.2
	5	9	14.4		22	12	37.7		6	15	5.2		21	15	56.4
	7	3	44.6		24	7	7.3		8	9	32.5		23	10	22.8
	8	22	14.8		26	1	36.9		10	3	59.6		25	4	49.2
	10	16	45.0		27	20	6.5		11	22	26.6		26	23	15.7
	12	11	15.2		29	14	36.0		13	16	53.6		28	17	42.2
	14	5	45.4		31	9	5.4		15	11	20.5		30	12	8.7
	16	0	15.7	June	2	3	34.8		17	6	47.4	Nov.	1	6	35.3
	17	18	46.0		3	22	4.1		19	0	14.1		3	1	2.0
	19	13	16.3		5	16	33.4		20	18	41.0		4	19	28.7
	21	7	46.7		7	11	2.7		22	13	7.6		6	13	55.6
	23	2	17.1		9	5	31.9		24	7	34.3		8	8	22.5
	24	20	47.5		11	0	1.1		26	2	0.8		10	2	49.5
	26	15	17.9		12	18	30.2		27	20	27.4		11	21	16.6
	28	9	48.3		14	12	59.3		29	14	53.8		13	15	43.8
	30	4	18.7		16	7	28.3		31	9	20.3		15	10	11.0
	31	22	49.1		18	1	57.3	Sept.	2	3	46.5		17	4	38.2
Feb.	2	17	19.5		19	20	26.2		3	22	12.8		18	23	5.6
	4	11	50.0		21	14	55.1		5	16	39.1		20	17	33.0
	6	6	20.5		23	9	24.0		7	11	5.3		22	12	0.5
	8	0	51.0		25	3	52.8		9	5	31.3		24	6	28.1
	9	19	21.6		26	22	21.5		10	23	57.4		26	0	55.7
April	13	13	38.3		28	16	50.2		12	18	23.5		27	19	23.6
	15	8	8.5		30	11	18.8		14	12	49.6		29	13	51.4
	17	2	38.7	July	2	5	47.4		16	7	15.5	Dec.	1	8	19.4
	18	21	8.9		4	0	15.9		18	1	41.6		3	2	47.3
	20	15	39.1		5	18	44.3		19	20	7.6		4	21	15.5
	22	10	9.2		7	13	12.7		21	14	33.6		6	15	43.6
	24	4	39.4		9	7	41.0		23	8	59.5		8	10	12.0
	25	23	9.5		11	2	9.2		25	3	25.5		10	4	40.2
	27	17	39.6		12	20	37.4		26	21	51.5		11	23	8.7
	29	12	9.7		14	15	5.6		28	16	17.4		13	17	37.1
May	1	6	39.7		16	9	33.7		30	10	43.3		15	12	5.8
	3	1	9.7		18	4	1.8	Oct.	2	5	9.2		17	6	34.3
	4	19	39.7		19	22	29.8		3	23	35.1		19	1	3.1
	6	14	9.7		21	16	57.7		5	18	1.1		20	19	31.7
	8	8	39.6		23	11	25.5		7	12	27.1		22	14	0.6
	10	3	9.5		25	5	53.1		9	6	53.1		24	8	29.4
	11	21	39.3		27	0	20.8		11	1	19.2		26	2	58.4
	13	16	9.1		28	18	48.3		12	19	45.3		27	21	27.3
	15	10	38.9		30	13	15.8		14	14	11.4		29	15	56.5
	17	5	8.7	Aug.	1	7	43.2		16	8	37.6		31	10	25.5

SATELLITE II.

		h	m			h	m			h	m			h	m
Jan.	3	4	47.2	Jan.	31	16	8.6	May	3	5	31.5	May	31	16	40.3
	6	18	11.7		4	5	33.9		6	18	56.7		4	6	2.6
	10	7	35.7		7	18	58.4		10	8	20.5		7	19	23.9
	13	21	0.5		15	10	25.2		13	21	45.1		11	8	45.5
	17	10	28.8	April	18	23	50.5		17	11	8.5		14	22	5.9
	20	23	54.7		22	13	16.6		21	0	32.4		18	11	26.6
	24	13	19.0		26	2	41.5		24	13	55.2		22	0	46.0
	28	2	44.2		29	16	7.1		28	3	18.3		25	14	5.6

JUPITER'S SATELLITES, 1868. 491

WASHINGTON MEAN TIME OF GEOCENTRIC SUPERIOR CONJUNCTION.

SATELLITE II.

June 29	h m 3 24.1	Aug. 17	h m 20 47.3	Oct. 2	h m 23 27.9	Nov. 18	h m 2 17.5
July 2	16 42.7	21	9 57.5	6	12 34.5	21	15 29.5
6	6 0.2	24	23 7.0	10	1 41.3	25	4 41.8
9	19 17.8	28	12 16.1	13	14 48.2	28	17 54.7
13	8 34.2	Sept. 1	1 24.8	17	3 55.3	Dec. 2	7 8.3
16	21 59.5	4	14 33.2	20	17 2.7	5	20 22.7
20	11 5.6	8	3 41.0	24	6 10.3	9	9 37.8
24	0 20.4	11	16 48.5	27	19 18.4	12	22 53.7
27	13 34.6	15	5 55.5	31	8 26.8	16	12 10.1
31	2 48.2	18	19 2.3	Nov. 3	21 35.6	20	1 27.1
Aug. 3	16 1.2	22	8 8.6	7	10 45.1	23	14 44.6
7	5 13.7	25	21 15.0	10	23 55.1	27	4 2.4
10	18 25.5	29	10 21.4	14	13 6.0	30	17 20.9
14	7 36.8						

SATELLITE III.

Jan. 7	h m 18 44.4	May 30	h m 12 5.5	Aug. 17	h m 7 26.7	Oct. 27	h m 16 45.4
14	23 9.6	June 6	16 20.9	24	10 56.3	Nov. 3	20 10.4
22	3 36.9	13	20 33.2	31	14 22.2	10	23 38.9
29	8 5.0	21	0 42.9	Sept. 7	17 43.4	18	3 13.2
Feb. 5	12 34.4	28	4 48.3	14	21 2.7	25	6 52.1
April 17	9 45.9	July 5	8 49.7	22	0 19.6	Dec. 2	10 36.0
24	14 13.8	12	12 46.8	29	3 36.0	9	14 25.5
May 1	18 40.7	19	16 39.9	Oct. 6	6 51.2	16	18 19.2
8	23 5.1	26	20 28.7	13	10 6.7	23	22 18.6
16	3 27.6	Aug. 3	0 12.5	20	13 24.4	31	2 22.2
23	7 47.8	10	3 52.1				

SATELLITE IV.

Jan. 10	h m 5 35.5	May 7	h m 7 36.5	June 9	h m 23 19.2	July 13	h m 12 20.3
27	2 7.1	24	3 44.7	26	18 12.4	30	5 28.5
April 20	11 5.6						

Factors by which x' and y' in the following Table must be multiplied to obtain the coördinates x and y for any time.

p = the inclination of the northern semi-minor axis of the apparent ellipse to the circle of declination; + East, — West.

x and y at the time of the visible phase of every fourth eclipse for the Ist, of every second eclipse for the II^d, and of every eclipse for the III^d and IVth Satellites.

492 JUPITER'S SATELLITES, 1868.

SATELLITE I

Date, 1868.	AT GEOCENTRIC SUPERIOR CONJUNCTION.			AT TIME OF ECLIPSE.		Date, 1868.	AT GEOCENTRIC SUPERIOR CONJUNCTION.			AT TIME OF ECLIPSE.	
	Factor for x' .	Factor for y' .	P.	z .	y .		Factor for x' .	Factor for y' .	P.	z .	y .
Jan. 1	0.946	+0.284	-23° 42.4	+33	+2	Aug. 4	1.188	+0.962	-24° 27.2	-43	+6
8	0.931	0.291	23 55.0	31	2	11	1.213	0.993	24 28.1	42	6
16	0.918	0.299	24 7.2	29	2	19	1.237	1.020	24 30.1	41	6
23	0.907	0.308	24 19.0	28	2	26	1.259	1.044	24 33.1	39	6
30	0.897	0.318	24 30.3	26	2	Sept. 2	1.278	1.062	24 37.5	37	6
Feb. 6	0.889	+0.330	-24 41.1	+24	+2	9	1.294	+1.075	-24 42.1	-34	+7
April 13	0.890	0.485	25 26.9	-24	3	16	1.307	1.081	24 46.6	31	7
20	0.898	0.509	25 25.4	25	3	23	1.315	1.080	24 51.7	28	7
27	0.907	0.533	25 23.1	27	3	30	1.317	1.073	24 56.7	-24	7
May 4	0.918	0.558	25 19.9	29	3	Oct. 7	1.314	1.059	25 1.3	+26	7
11	0.931	+0.583	-25 15.7	-31	+4	14	1.307	+1.038	-25 5.4	+30	+7
18	0.945	0.609	25 10.9	33	4	21	1.294	1.011	25 8.8	33	7
26	0.961	0.637	25 5.8	35	4	28	1.278	0.982	25 11.7	36	6
June 2	0.978	0.666	25 0.1	37	4	Nov. 4	1.258	0.950	25 13.9	39	6
9	0.997	0.696	24 54.7	38	4	11	1.238	0.918	25 15.5	41	6
16	1.017	+0.728	-24 49.1	-40	+5	18	1.211	+0.885	-25 16.5	+42	+6
23	1.039	0.760	24 43.8	41	5	26	1.185	0.853	25 17.0	42	5
30	1.061	0.793	24 39.0	42	5	Dec. 3	1.158	0.822	25 17.0	43	5
July 7	1.085	0.826	24 34.7	42	5	10	1.131	0.793	25 16.3	43	5
14	1.110	0.860	24 31.2	43	5	17	1.105	0.766	25 15.1	42	5
21	1.136	+0.895	-24 28.8	-43	+6	24	1.079	+0.740	-25 13.4	+41	+5
28	1.162	+0.929	-24 27.4	-43	+6	31	1.054	+0.714	-25 10.9	+39	+5

SATELLITE II.

Date, 1868.	AT GEOCENTRIC SUPERIOR CONJUNCTION.			AT TIME OF ECLIPSE.		Date, 1868.	AT GEOCENTRIC SUPERIOR CONJUNCTION.			AT TIME OF ECLIPSE.	
	Factor for x' .	Factor for y' .	P.	z .	y .		Factor for x' .	Factor for y' .	P.	z .	y .
Jan. 3	0.943	+0.306	-24° 6.4	+42	+4	Aug. 7	1.196	+0.967	-24° 31.8	-55	+11
10	0.929	0.312	24 18.6	39	4	14	1.221	0.996	24 33.1	53	12
17	0.916	0.320	24 30.4	36	4	21	1.245	1.021	24 35.6	50	12
24	0.905	0.329	24 41.7	33	4	28	1.266	1.043	24 39.1	46	12
31	0.896	0.340	24 52.4	30	4	Sept. 4	1.284	1.059	24 43.4	42	13
Feb. 7	0.888	+0.352	-25 2.5	+28	+4	11	1.299	+1.068	-24 48.4	-37	+13
April 15	0.892	0.511	25 39.2	-29	6	18	1.310	1.073	24 53.7	31	13
22	0.900	0.532	25 36.7	32	6	25	1.316	1.071	24 59.1	-25	13
29	0.910	0.555	25 33.3	35	7	Oct. 2	1.316	1.062	25 4.2	+22	13
May 6	0.922	0.578	25 29.1	38	7	10	1.312	1.045	25 9.0	28	12
13	0.935	+0.603	-25 24.1	-40	+7	17	1.303	+1.024	-25 13.2	+34	+12
21	0.949	0.629	25 18.6	43	7	24	1.280	0.999	25 16.8	39	12
28	0.964	0.656	25 12.6	45	8	31	1.272	0.971	25 19.6	43	12
June 4	0.982	0.685	25 6.3	48	8	Nov. 7	1.250	0.939	25 21.7	47	11
11	1.002	0.714	25 0.1	50	8	14	1.227	0.908	25 23.1	50	11
18	1.023	+0.744	-24 54.1	-52	+9	21	1.201	+0.877	-25 23.9	+52	+10
25	1.045	0.775	24 48.4	54	9	28	1.175	0.847	25 24.0	53	10
July 2	1.068	0.807	24 43.2	56	9	Dec. 5	1.148	0.820	25 23.6	54	10
9	1.092	0.839	24 38.8	58	10	12	1.121	0.794	25 22.5	55	9
16	1.118	0.872	24 35.3	60	10	20	1.095	0.770	25 20.8	56	9
24	1.144	+0.904	-24 33.0	-62	+11	27	1.069	+0.748	-25 18.5	+58	+9
31	1.170	+0.936	-24 31.8	-64	+11						

JUPITER'S SATELLITES, 1868. 493

SATELLITE III.

Date, 1868.	AT GEOCENTRIC SUPERIOR CONJUNCTION.			AT TIME OF ECLIPSE			
	Factor for x' .	Factor for y' .	p .	Disappearance.		Reappearance.	
				z .	y .	z .	y .
Jan. 7	0.934	+0.221	-23° 50.3	+23"	+4"	+54"	+4"
14	0.921	0.229	24 3.4	+19	4	50	4
22	0.909	0.238	24 16.0	..	..	45	4
29	0.899	0.248	24 27.9	..	..	40	4
Feb. 5	0.890	0.260	24 39.2	..	..	+35	4
April 17	0.894	+0.427	-25 29.9	-37	+7	..	..
24	0.903	0.449	25 28.2	42	7	..	..
May 1	0.913	0.472	25 25.5	46	8	-19	+8
8	0.925	0.496	25 22.1	51	8	23	8
16	0.939	0.521	25 17.9	56	9	28	9
23	0.954	+0.547	-25 13.3	-60	+9	-31	+9
30	0.971	0.575	25 8.1	63	10	34	10
June 6	0.989	0.604	25 2.6	66	10	37	10
13	1.009	0.633	24 57.1	70	11	39	11
21	1.031	0.664	24 51.9	72	11	42	11
28	1.054	+0.695	-24 47.0	-74	+12	-44	+12
July 5	1.078	0.727	24 42.6	76	12	45	12
12	1.103	0.759	24 39.0	77	13	46	13
19	1.128	0.792	24 36.4	78	13	46	13
26	1.154	0.823	24 34.7	77	14	45	14
Aug. 3	1.181	+0.854	-24 34.1	-76	+14	-43	+14
10	1.207	0.883	24 34.7	73	15	39	15
17	1.232	0.909	24 36.4	69	15	34	15
24	1.254	0.931	24 39.2	64	16	29	16
31	1.274	0.949	24 42.9	57	16	-23	16
Sept. 7	1.291	+0.961	-24 47.3	-50	+16	..	..
14	1.304	0.967	24 52.1	42	16	..	..
22	1.313	0.967	24 57.0	32	16	..	..
29	1.317	0.961	25 1.8	-21	16	..	..
Oct. 6	1.315	0.948	25 6.3	..	..	+25	+16
13	1.308	+0.928	-25 10.4	..	..	+35	+16
20	1.297	0.904	25 13.9	..	..	44	15
27	1.281	0.876	25 16.7	+18	+15	51	15
Nov. 3	1.262	0.846	25 18.8	26	14	58	14
10	1.239	0.815	25 20.4	32	14	64	14
18	1.214	+0.784	-25 21.4	+38	+13	+69	+13
25	1.188	0.753	25 21.9	42	13	71	13
Dec. 2	1.161	0.725	25 21.9	45	12	73	12
9	1.134	0.699	25 21.5	46	12	74	12
16	1.107	0.676	25 20.4	47	11	74	11
23	1.081	+0.655	-25 18.8	+46	+11	+73	+11
31	1.055	+0.637	-25 16.5	+45	+11	+71	+11

494 JUPITER'S SATELLITES, 1868.

SATELLITE IV.							
Date, 1868.	AT GEOCENTRIC SUPERIOR CONJUNCTION.			AT TIME OF ECLIPSE.			
	Factor for x'.	Factor for y'.	p.	Disappearance.		Reappearance.	
				x.	y.	x.	y.
Jan. 10	0.929	+0.185	-23° 44.3	+ 57"	+ 6"	+ 84"	+ 6"
27	0.902	0.202	24 13.9	+ 35	7	+ 60	7
April 21	0.899	0.360	25 20.4	- 56	12	- 37	12
May 7	0.924	0.405	25 14.2	73	14	55	14
24	0.959	0.455	25 4.1	88	16	72	16
June 9	1.001	+0.511	-24 51.9	-102	+18	- 86	+18
26	1.052	0.572	24 40.1	112	20	98	20
July 13	1.110	0.635	24 31.3	115	22	103	22
30	1.171	+0.696	-24 27.4	-110	+24	-102	+24

SATELLITE I.								
COORDINATES IN THE MEAN APPARENT ELLIPSE, DESCRIBED BY THE SATELLITE, AND FOR THE MEAN DISTANCE OF JUPITER FROM THE SUN, FOR THE TIME (t) AFTER GEO- CENTRIC SUPERIOR CONJUNCTION.								
t	x'	y'	t	x'	y'	t	x'	y'
d h m			d h m			d h m		
0 0 0	+ 0.0	+ 6.6	0 5 20	+ 77.5	+ 4.7	0 10 40	+102.1	- 0.1
0 0 20	5.4	6.6	0 5 40	81.2	4.4	0 11 0	109.0	0.4
0 0 40	10.8	6.6	0 6 0	84.7	4.2	0 11 20	108.6	0.7
0 1 0	16.1	6.6	0 6 20	88.0	3.9	0 11 40	107.9	1.0
0 1 20	21.4	6.5	0 6 40	91.1	3.7	0 12 0	106.9	1.3
0 1 40	+ 26.6	+ 6.4	0 7 0	+ 94.0	+ 3.4	0 12 20	+105.7	- 1.7
0 2 0	31.8	6.3	0 7 20	96.6	3.1	0 12 40	104.2	2.0
0 2 20	36.9	6.2	0 7 40	99.0	2.8	0 13 0	102.5	2.3
0 2 40	42.0	6.1	0 8 0	101.1	2.5	0 13 20	100.5	2.6
0 3 0	46.9	6.0	0 8 20	103.0	2.2	0 13 40	98.3	2.9
0 3 20	+ 51.7	+ 5.8	0 8 40	+104.7	+ 1.9	0 14 0	+ 95.8	- 3.2
0 3 40	56.4	5.7	0 9 0	106.1	1.6	0 14 20	93.1	3.5
0 4 0	60.9	5.5	0 9 20	107.3	1.3	0 14 40	90.2	3.7
0 4 20	65.3	5.3	0 9 40	108.1	0.9	0 15 0	87.1	4.0
0 4 40	69.5	5.1	0 10 0	108.7	0.6	0 15 20	83.7	4.3
0 5 0	+ 73.6	+ 4.9	0 10 20	+109.1	+ 0.3	0 15 40	+ 80.1	- 4.5

JUPITER'S SATELLITES, 1868. 495

COORDINATES IN THE MEAN APPARENT ELLIPSE

SATELLITE I.

<i>t</i>	<i>z'</i>	<i>y'</i>	<i>t</i>	<i>z'</i>	<i>y'</i>	<i>t</i>	<i>z'</i>	<i>y'</i>
d. h. m.			d. h. m.			d. h. m.		
0 16 0	+ 76.4	- 4.7	1 1 40	- 66.6	- 5.2	1 11 0	- 97.6	+ 3.0
0 16 30	72.5	5.0	1 2 0	70.8	5.0	1 11 30	95.1	3.3
0 16 40	68.4	5.2	1 2 30	74.8	4.8	1 11 40	92.3	3.5
0 17 0	64.1	5.4	1 2 40	78.6	4.6	1 12 0	89.3	3.8
0 17 30	59.6	5.5	1 3 0	82.3	4.4	1 12 30	86.1	4.1
0 17 40	+ 55.0	- 5.7	1 3 30	- 85.6	- 4.1	1 12 40	- 82.7	+ 4.3
0 18 0	50.3	5.9	1 3 40	88.9	3.8	1 13 0	79.1	4.6
0 18 30	45.5	6.0	1 4 0	91.9	3.6	1 13 30	75.3	4.8
0 18 40	40.5	6.1	1 4 30	94.7	3.3	1 13 40	71.3	5.0
0 19 0	35.5	6.3	1 4 40	97.3	3.0	1 14 0	67.1	5.2
0 19 30	+ 30.4	- 6.4	1 5 0	- 99.8	- 2.7	1 14 30	- 62.8	+ 5.4
0 19 40	25.3	6.4	1 5 30	101.7	2.4	1 14 40	58.3	5.6
0 20 0	19.9	6.5	1 5 40	103.5	2.1	1 15 0	53.7	5.8
0 20 30	14.6	6.6	1 6 0	105.1	1.8	1 15 30	49.0	5.9
0 20 40	9.2	6.6	1 6 30	106.4	1.5	1 15 40	44.1	6.1
0 21 0	+ 8.8	- 6.6	1 6 40	- 107.5	- 1.2	1 16 0	- 39.1	+ 6.3
0 21 30	- 1.5	6.6	1 7 0	108.3	0.8	1 16 30	34.0	6.3
0 21 40	6.9	6.6	1 7 30	108.8	0.5	1 16 40	28.9	6.4
0 22 0	12.3	6.6	1 7 40	109.1	- 0.2	1 17 0	23.7	6.5
0 22 30	17.6	6.5	1 8 0	109.1	+ 0.1	1 17 30	18.4	6.5
0 22 40	- 22.9	- 6.5	1 8 30	- 108.9	+ 0.5	1 17 40	- 13.0	+ 6.6
0 23 0	28.1	6.4	1 8 40	108.4	0.8	1 18 0	7.7	6.6
0 23 30	33.3	6.3	1 9 0	107.8	1.1	1 18 30	- 2.3	6.6
0 23 40	38.4	6.2	1 9 30	106.6	1.4	1 18 40	+ 3.1	6.6
1 0 0	43.4	6.1	1 9 40	105.3	1.8	1 19 0	8.5	6.6
1 0 30	- 48.3	- 5.9	1 10 0	- 103.8	+ 2.1	1 19 30	+ 13.8	+ 6.6
1 0 40	53.1	5.8	1 10 30	102.0	2.4	1 19 40	19.1	6.5
1 1 0	57.7	5.6	1 10 40	- 99.9	+ 2.7	1 20 0	+ 24.4	+ 6.5
1 1 30	- 62.9	- 5.4						

SATELLITE II.

<i>t</i>	<i>z'</i>	<i>y'</i>	<i>t</i>	<i>z'</i>	<i>y'</i>	<i>t</i>	<i>z'</i>	<i>y'</i>
d. h. m.			d. h. m.			d. h. m.		
0 0 0	+ 0.0	+12.2	0 10 40	+122.9	+ 8.6	0 21 30	+174.3	- 0.0
0 0 40	8.5	12.2	0 11 30	128.8	8.2	0 22 0	178.6	0.6
0 1 30	17.0	12.1	0 12 0	134.4	7.7	0 22 40	172.9	1.2
0 2 0	25.5	12.1	0 12 40	139.6	7.3	0 23 30	171.8	1.8
0 2 40	33.9	12.0	0 13 30	144.5	6.8	1 0 0	170.4	2.4
0 3 30	+ 42.2	+11.8	0 14 0	+149.0	+ 6.3	1 0 40	+168.5	- 3.0
0 4 0	50.5	11.7	0 14 40	153.3	5.7	1 1 30	166.3	3.5
0 4 40	58.6	11.5	0 15 30	157.0	5.2	1 2 0	163.5	4.1
0 5 30	66.5	11.3	0 16 0	160.5	4.7	1 2 40	160.4	4.7
0 6 0	74.3	11.0	0 16 40	163.6	4.1	1 3 30	157.0	5.2
0 6 40	+ 81.9	+10.8	0 17 30	+166.2	+ 3.5	1 4 0	+153.2	- 5.8
0 7 30	89.4	10.5	0 18 0	168.4	3.0	1 4 40	149.0	6.3
0 8 0	96.6	10.1	0 18 40	170.5	2.4	1 5 30	144.4	6.8
0 8 40	103.6	9.8	0 19 30	171.9	1.8	1 6 0	139.5	7.3
0 9 30	110.3	9.4	0 20 0	172.9	1.2	1 6 40	134.2	7.7
0 10 0	+116.7	+ 9.0	0 20 40	+173.6	+ 0.6	1 7 30	+128.6	- 8.2

496 JUPITER'S SATELLITES, 1868.

COORDINATES IN THE MEAN APPARENT ELLIPSE.

SATELLITE II.

<i>t</i>	<i>x'</i>	<i>y'</i>	<i>t</i>	<i>x'</i>	<i>y'</i>	<i>t</i>	<i>x'</i>	<i>y'</i>
d. h. m.			d. h. m.			d. h. m.		
1 8 0	+122.7	- 8.6	2 3 20	-103.7	- 9.8	2 22 0	-156.9	+ 5.2
1 8 40	116.5	9.0	2 4 0	110.4	9.4	2 22 40	153.0	5.8
1 9 20	110.1	9.4	2 4 40	116.8	9.0	2 23 20	148.8	6.3
1 10 0	103.4	9.8	2 5 20	123.0	8.6	3 0 0	144.2	6.8
1 10 40	96.4	10.1	2 6 0	128.9	8.2	3 0 40	139.3	7.3
1 11 20	+ 89.2	-10.5	2 6 40	-134.5	- 7.7	3 1 20	-134.1	+ 7.8
1 12 0	81.7	10.8	2 7 20	139.7	7.2	3 2 0	128.5	8.2
1 12 40	74.1	11.0	2 8 0	144.6	6.7	3 2 40	122.6	8.6
1 13 20	66.3	11.3	2 8 40	149.1	6.2	3 3 20	116.4	9.0
1 14 0	58.3	11.5	2 9 20	153.3	5.7	3 4 0	109.9	9.4
1 14 40	+ 50.2	-11.7	2 10 0	-157.1	- 5.2	3 4 40	-108.1	+ 9.8
1 15 20	42.0	11.8	2 10 40	160.6	4.6	3 5 20	96.1	10.1
1 16 0	33.7	12.0	2 11 20	163.7	4.1	3 6 0	88.9	10.5
1 16 40	25.3	12.1	2 12 0	166.4	3.5	3 6 40	81.5	10.8
1 17 20	16.8	12.1	2 12 40	168.6	2.9	3 7 20	73.9	11.0
1 18 0	+ 8.3	-12.2	2 13 20	-170.4	- 2.3	3 8 0	- 66.1	+11.3
1 18 40	- 0.2	12.2	2 14 0	171.9	1.8	3 8 40	58.1	11.5
1 19 20	8.8	12.2	2 14 40	173.0	1.2	3 9 20	50.0	11.7
1 20 0	17.3	12.1	2 15 20	173.6	- 0.6	3 10 0	41.8	11.8
1 20 40	25.7	12.1	2 16 0	173.8	+ 0.0	3 10 40	33.5	12.0
1 21 20	- 34.1	-12.0	2 16 40	-173.6	+ 0.6	3 11 20	- 25.1	+12.1
1 22 0	42.4	11.8	2 17 20	172.9	1.2	3 12 0	16.6	12.1
1 22 40	50.6	11.7	2 18 0	171.8	1.8	3 12 40	- 8.1	12.2
1 23 20	58.7	11.5	2 18 40	170.3	2.4	3 13 20	+ 0.4	12.2
2 0 0	66.7	11.3	2 19 20	168.4	3.0	3 14 0	9.0	12.3
2 0 40	- 74.5	-11.0	2 20 0	-166.2	+ 3.5	3 14 40	+ 17.3	+12.1
2 1 20	82.1	10.7	2 20 40	163.5	4.1	3 15 20	26.0	12.1
2 2 0	89.5	10.4	2 21 20	-160.4	+ 4.7	3 16 0	+ 34.4	+12.0
2 2 40	- 96.7	-10.1						

SATELLITE III.

<i>t</i>	<i>x'</i>	<i>y'</i>	<i>t</i>	<i>x'</i>	<i>y'</i>	<i>t</i>	<i>x'</i>	<i>y'</i>
d. h. m.			d. h. m.			d. h. m.		
0 0 0	+ 0.0	+17.4	0 21 20	+194.7	+12.4	1 18 40	+277.2	+ 0.2
0 1 20	13.5	17.4	0 22 40	204.1	11.8	1 20 0	277.0	- 0.6
0 2 40	26.9	17.3	1 0 0	213.0	11.1	1 21 20	276.2	1.5
0 4 0	40.3	17.2	1 1 20	221.4	10.5	1 22 40	274.7	2.2
0 5 20	53.8	17.1	1 2 40	229.3	9.8	2 0 0	272.6	3.2
0 6 40	+ 66.8	+16.9	1 4 0	+236.6	+ 9.1	2 1 20	+269.8	- 4.0
0 8 0	79.8	16.7	1 5 20	243.3	8.3	2 2 40	266.4	4.8
0 9 20	92.7	16.4	1 6 40	249.5	7.6	2 4 0	262.3	5.6
0 10 40	105.3	16.1	1 8 0	255.1	6.8	2 5 20	257.6	6.4
0 12 0	117.6	15.8	1 9 20	260.0	6.0	2 6 40	252.3	7.2
0 13 20	+129.7	+15.4	1 10 40	+264.3	+ 5.2	2 8 0	+246.4	- 8.0
0 14 40	141.5	15.0	1 12 0	268.0	4.4	2 9 20	240.0	8.7
0 16 0	153.0	14.5	1 13 20	271.1	3.6	2 10 40	233.0	9.4
0 17 20	164.1	14.0	1 14 40	273.6	2.7	2 12 0	225.4	10.1
0 18 40	174.7	13.5	1 16 0	275.5	1.9	2 13 20	217.3	10.8
0 20 0	+184.9	+13.0	1 17 20	+276.7	+ 1.1	2 14 40	+208.6	-11.5

JUPITER'S SATELLITES, 1868. 497

COORDINATES IN THE MEAN APPARENT ELLIPSE.

SATELLITE III.

<i>t</i>	<i>x'</i>	<i>y'</i>	<i>t</i>	<i>x'</i>	<i>y'</i>	<i>t</i>	<i>x'</i>	<i>y'</i>
d. h. m.	°	"	d. h. m.	°	"	d. h. m.	°	"
2 16 0	+199.5	-12.1	4 6 40	-158.4	-14.3	5 20 0	-255.1	+ 6.8
2 17 20	189.9	12.7	4 8 0	169.3	13.8	5 21 20	249.5	7.6
2 18 40	179.9	13.3	4 9 20	179.8	13.3	5 22 40	243.3	8.9
2 20 0	169.4	13.8	4 10 40	189.9	12.7	6 0 0	236.6	9.1
2 21 20	158.5	14.3	4 12 0	199.5	12.1	6 1 20	229.3	9.8
2 22 40	+147.2	-14.8	4 13 20	-208.6	-11.5	6 2 40	-221.4	+10.5
3 0 0	135.6	15.2	4 14 40	217.3	10.8	6 4 0	213.0	11.1
3 1 20	123.7	15.6	4 16 0	225.5	10.1	6 5 20	204.1	11.8
3 2 40	111.5	16.0	4 17 20	233.1	9.4	6 6 40	194.7	12.4
3 4 0	99.0	16.3	4 18 40	240.1	8.7	6 8 0	184.9	13.0
3 5 20	+ 86.3	-16.6	4 20 0	-246.5	- 8.0	6 9 20	-174.7	+13.5
3 6 40	73.3	16.8	4 21 20	252.3	7.2	6 10 40	164.1	14.0
3 8 0	60.2	17.0	4 22 40	257.6	6.4	6 12 0	153.0	14.5
3 9 20	47.0	17.2	5 0 0	262.3	5.6	6 13 20	141.5	15.0
3 10 40	33.6	17.3	5 1 20	266.4	4.8	6 14 40	129.7	15.4
3 12 0	+ 20.2	-17.4	5 2 40	-269.8	- 4.0	6 16 0	-117.6	+15.8
3 13 20	+ 6.7	17.4	5 4 0	272.6	3.2	6 17 20	105.2	16.1
3 14 40	- 6.8	17.4	5 5 20	274.7	2.3	6 18 40	92.6	16.4
3 16 0	20.3	17.4	5 6 40	276.2	1.5	6 20 0	79.3	16.7
3 17 20	33.7	17.3	5 8 0	277.0	- 0.6	6 21 20	66.8	16.9
3 18 40	- 47.1	-17.2	5 9 20	-277.2	+ 0.2	6 22 40	- 53.6	+17.1
3 20 0	60.3	17.0	5 10 40	276.7	1.1	7 0 0	40.3	17.2
3 21 20	73.4	16.8	5 12 0	275.5	1.9	7 1 20	26.9	17.3
3 22 40	86.3	16.6	5 13 20	273.7	2.7	7 2 40	- 13.4	17.4
4 0 0	99.0	16.3	5 14 40	271.2	3.6	7 4 0	+ 0.1	17.4
4 1 20	-111.5	-16.0	5 16 0	-268.1	+ 4.4	7 5 20	+ 13.6	+17.4
4 2 40	123.7	15.6	5 17 20	264.4	5.2	7 6 40	27.0	17.3
4 4 0	135.7	15.2	5 18 40	-260.1	+ 6.0	7 8 0	+ 40.4	+17.2
4 5 20	-147.2	-14.8						

SATELLITE IV.

<i>t</i>	<i>x'</i>	<i>y'</i>	<i>t</i>	<i>x'</i>	<i>y'</i>	<i>t</i>	<i>x'</i>	<i>y'</i>
d. h.	°	"	d. h.	°	"	d. h.	°	"
0 0	+ 0.0	+34.8	2 0	+332.3	+25.5	4 0	+486.2	+ 2.5
0 3	22.8	34.8	2 3	348.6	24.3	4 3	487.3	+ 0.8
0 6	45.6	34.7	2 6	364.1	23.1	4 6	487.3	- 0.8
0 9	68.3	34.5	2 9	378.9	21.9	4 9	486.3	2.4
0 12	90.9	34.2	2 12	392.9	20.6	4 12	484.2	4.1
0 15	+113.2	+33.9	2 15	+406.0	+19.3	4 15	+480.9	- 5.7
0 18	135.3	33.5	2 18	418.2	17.9	4 18	476.6	7.3
0 21	157.1	33.0	2 21	429.5	16.5	4 21	471.3	8.9
1 0	178.5	32.4	3 0	439.8	15.0	5 0	465.0	10.4
1 3	199.6	31.8	3 3	449.1	13.5	5 3	457.7	12.0
1 6	+220.3	+31.1	3 6	+457.5	+12.0	5 6	+449.3	-13.5
1 9	240.4	30.3	3 9	464.9	10.5	5 9	439.9	15.0
1 12	260.0	29.5	3 12	471.3	8.9	5 12	429.6	16.4
1 15	279.0	28.6	3 15	476.6	7.3	5 15	418.4	17.9
1 18	297.4	27.6	3 18	480.8	5.7	5 18	406.2	19.3
1 21	+315.2	+26.6	3 21	+484.0	+ 4.1	5 21	+393.1	-20.6

498 JUPITER'S SATELLITES, 1868.

COORDINATES IN THE MEAN APPARENT ELLIPSE

SATELLITE IV.

t		x'	y'	t		x'	y'	t		x'	y'
d.	h.			d.	h.			d.	h.		
6	0	+379.2	-21.9	9	18	-240.1	-30.3	13	12	-457.6	+12.0
6	3	364.4	23.1	9	21	259.7	29.5	13	15	449.3	13.5
6	6	348.8	24.3	10	0	278.7	28.6	13	18	440.0	15.0
6	9	332.5	25.5	10	3	297.2	27.6	13	21	429.7	16.4
6	12	315.4	26.6	10	6	315.0	26.6	14	0	418.5	17.8
6	15	+297.6	-27.0	10	9	-332.1	-25.5	14	3	-406.3	+19.2
6	18	279.2	28.5	10	12	348.4	24.4	14	6	393.2	20.6
6	21	260.2	29.4	10	15	363.9	23.2	14	9	379.3	21.9
7	0	240.6	30.3	10	18	378.7	21.9	14	12	364.6	23.1
7	3	220.5	31.1	10	21	392.7	20.6	14	15	349.1	24.3
7	6	+199.9	-31.8	11	0	-405.8	-19.3	14	18	-332.8	+25.4
7	9	178.8	32.4	11	3	418.0	17.9	14	21	315.7	26.5
7	12	157.4	33.0	11	6	429.3	16.5	15	0	298.0	27.5
7	15	135.6	33.5	11	9	439.6	15.0	15	3	279.6	28.5
7	18	113.5	33.9	11	12	449.0	13.5	15	6	260.5	29.4
7	21	+ 91.2	-34.2	11	15	-457.4	-12.0	15	9	-240.9	+30.3
8	0	68.7	34.5	11	18	464.8	10.5	15	12	220.8	31.1
8	3	46.0	34.7	11	21	471.2	8.9	15	15	200.2	31.8
8	6	23.2	34.8	12	0	476.5	7.3	15	18	179.2	32.4
8	9	+ 0.3	34.8	12	3	480.8	5.7	15	21	157.7	33.0
8	12	- 22.5	-34.8	12	6	-484.0	- 4.1	16	0	-135.9	+33.5
8	15	45.3	34.7	12	9	486.2	2.5	16	3	113.8	33.9
8	18	68.0	34.5	12	12	487.3	- 0.8	16	6	91.5	34.2
8	21	90.5	34.2	12	15	487.3	+ 0.8	16	9	69.0	34.5
9	0	112.9	33.9	12	18	486.3	2.4	16	12	46.3	34.7
9	3	-135.0	-33.5	12	21	-484.2	+ 4.0	16	15	- 23.5	+34.8
9	6	156.8	33.0	13	0	480.9	5.7	16	18	- 0.6	34.8
9	9	178.2	32.4	13	3	476.6	7.3	16	21	+ 22.2	34.8
9	12	199.3	31.8	13	6	471.3	8.9	17	0	+ 45.0	+34.7
9	15	-220.0	-31.1	13	9	-465.0	+10.5				

SATURN'S RING, &c., 1868. 499

THE APPARENT ELEMENTS OF SATURN'S RING.

Mean Noon.	<i>a</i> Outer Major Axis.	<i>b</i> Outer Minor Axis.	<i>p</i> Inclination of Northern Semi-minor Axis to Circle of Declination from North to East.	<i>l</i> The Elevation of the Earth above the Plane of the Ring.	<i>l'</i> The Elevation of the Sun above the Plane of the Ring.	Earth's Longitude from Saturn counted on Plane of Ring from the Ring's As- cending Node on	
						Equator.	Ecliptic.
Jan. 1	35° 05	14° 89	+3° 10.9	+25° 6.2	+24° 23.5	295° 11.4	252° 6.8
21	35° 89	15.35	3 25.4	25 19.5	24 30.9	297 12.0	254 7.5
Feb. 10	36° 96	15.88	3° 36.0	25 26.9	24 38.0	298 41.7	255 37.3
March 1	38° 21	16.44	3 42.0	25 29.2	24 45.0	299 32.5	256 28.1
21	39° 49	16.97	3 42.7	25 26.8	24 51.5	299 39.8	256 35.5
April 10	40° 64	17.39	3 38.4	25 20.6	24 58.1	299 3.6	255 59.4
30	41° 49	17.66	3 30.1	25 11.2	25 4.5	297 52.3	254 48.1
May 20	41° 81	17.66	3 18.7	24 59.1	25 10.7	296 18.4	253 14.2
June 9	41° 61	17.47	3 7.3	24 49.4	25 16.7	294 43.0	251 38.9
29	40° 91	17.09	2 57.5	24 42.4	25 22.5	293 23.4	250 19.3
July 19	39° 85	16.61	2 51.5	24 38.5	25 28.1	292 34.9	249 31.0
Aug. 8	38° 60	16.13	2 50.5	24 42.0	25 34.5	292 26.0	249 22.1
28	37° 33	15.70	2 54.6	24 51.8	25 38.8	292 59.0	249 55.1
Sept. 17	36° 19	15.36	3 3.6	25 6.7	25 43.9	294 11.3	251 7.5
Oct. 7	35° 25	15.14	3 16.6	25 25.7	25 48.8	295 57.6	252 53.9
27	34° 58	15.01	3 32.5	25 43.3	25 53.5	298 9.6	255 6.0
Nov. 16	34° 21	15.00	3 50.3	26 0.4	25 58.1	300 39.1	257 35.5
Dec. 6	34° 16	15.10	4 8.4	26 14.4	26 2.4	303 16.2	260 12.7
26	34° 43	15.31	4 25.8	26 24.4	26 6.5	305 50.6	262 47.1
31	34° 54	15.38	+4 29.8	+26 25.2	+26 7.6	306 27.4	263 24.0

Factor which is to be multiplied by *a* and *b* to obtain the axes of

The inner ellipse of the outer Ring = 0.8801 log. Factor = 9.9445

The outer ellipse of the inner Ring = 0.8599 " = 9.9344

The inner ellipse of the inner Ring = 0.6650 " = 9.8228

The inner ellipse of Bond's dusky Ring = 0.5486 " = 9.7392

NOTE. — The sign of *l* indicates whether the visible surface of the Ring is northern or southern.

THE APPARENT DISCS OF VENUS AND MARS.

The Versed Sines of their Illuminated Portions, divided by their Apparent Diameters.

1868.	Venus.	Mars.	1868.	Venus.	Mars.
January 15	0.893	0.999	July 15	0.001	0.939
February 15	0.825	0.996	August 15	0.212	0.923
March 15	0.738	0.990	September 15	0.445	0.907
April 15	0.614	0.980	October 15	0.601	0.896
May 15	0.455	0.968	November 15	0.722	0.894
June 15	0.220	0.952	December 15	0.813	0.914

WASHINGTON MEAN TIME.

PLANETARY CONSTELLATIONS.

		d	h	m		
Jan.		1	4	58	♂	♂
		1	12	55	♂	♂
		2	10	11	♂	♂
		2	11	13	♂	♂
		5	14	47	♂	♂
					♂	♂
					♂	♂
					♂	♂
					♂	♂
					♂	♂
Feb.		6	20	28	♂	♂
		8	16	59	♂	♂
		17	4	22	♂	♂
		18	22	17	♂	♂
		23	8	43	♂	♂
					♂	♂
					♂	♂
					♂	♂
					♂	♂
					♂	♂
Mar.		23	15	59	♂	♂
		24	6	5	♂	♂
		26	21	3	♂	♂
		27	3	30	♂	♂
		27	6	25	♂	♂
					♂	♂
					♂	♂
					♂	♂
					♂	♂
					♂	♂
Apr.		29	17	5	♂	♂
		30	3	56	♂	♂
		5	2	20	♂	♂
		15	6	17	♂	♂
		15	8	30	♂	♂
					♂	♂
					♂	♂
					♂	♂
					♂	♂
					♂	♂
May		17	0	29	♂	♂
		19	20	5	♂	♂
		20	3	3	♂	♂
		21	20	32	♂	♂
		22	-	-	♂	♂
					♂	♂
					♂	♂
					♂	♂
					♂	♂
					♂	♂
June		23	21	48	♂	♂
		23	23	30	♂	♂
		24	16	48	♂	♂
		25	16	22	♂	♂
		25	23	7	♂	♂
					♂	♂
					♂	♂
					♂	♂
					♂	♂
					♂	♂
July		25	23	58	♂	♂
		26	21	41	♂	♂
		1	3	57	♂	♂
		1	21	31	♂	♂
		2	6	52	♂	♂
					♂	♂
					♂	♂
					♂	♂
					♂	♂
					♂	♂
Aug.		3	9	58	♂	♂
		4	12	13	♂	♂
		7	17	2	♂	♂
		9	23	1	♂	♂
		13	17	57	♂	♂
					♂	♂
					♂	♂
					♂	♂
					♂	♂
					♂	♂
Sept.		14	7	51	♂	♂
		16	1	36	♂	♂
		16	11	5	♂	♂
		19	14	27	♂	♂
		20	2	57	♂	♂
					♂	♂
					♂	♂
					♂	♂
					♂	♂
					♂	♂
Oct.		21	14	33	♂	♂
		21	23	50	♂	♂
		22	17	21	♂	♂
		24	8	9	♂	♂
		24	15	30	♂	♂
		26	1	48	♂	♂
		26	20	47	♂	♂
					♂	♂
					♂	♂
					♂	♂
Nov.		28	13	8	♂	♂
		30	16	5	♂	♂
		3	13	0	♂	♂
		3	19	36	♂	♂
		4	1	9	♂	♂
					♂	♂
					♂	♂
					♂	♂
					♂	♂
					♂	♂
Dec.		4	6	52	♂	♂
		7	22	10	♂	♂
		10	1	59	♂	♂
		12	20	36	♂	♂
		17	4	32	♂	♂
					♂	♂
					♂	♂
					♂	♂
					♂	♂
					♂	♂

WASHINGTON MEAN TIME.

PLANETARY CONSTELLATIONS.

		d	h	m					
July		3	22	4	☐	♂	♂	♂	
		4	17	8	♂	♂	♂	♂	
		8	14	43	☐	♂	♂	♂	
		11	15	25	♂	♂	♂	♂	
		11	22	57	♂	♂	♂	♂	
		13	18	16	♂	♂	♂	♂	Inf.
		15	23	45	♂	♂	♂	♂	♂ + 4 57
		16	0	22	♂	♂	♂	♂	Inf.
		18	8	3	♂	♂	♂	♂	♂ + 3 52
		18	15	35	♂	♂	♂	♂	♂ - 1 39
		18	20	28	♂	♂	♂	♂	♂ - 2 57
		20	17	0	♂	♂	♂	♂	stationary.
		21	4	51	♂	♂	♂	♂	greatest Hel. Lat. S.
		24	6	42	♂	♂	♂	♂	stationary.
		25	17	18	♂	♂	♂	♂	in Aphelion.
		26	17	30	♂	♂	♂	♂	♂ + 3 19
		27	17	0	♂	♂	♂	♂	in ♀
		27	18	10	♂	♂	♂	♂	♂ - 3 24
	Aug.	2	8	4	♂	♂	♂	♂	stationary.
		2	14	40	♂	♂	♂	♂	greatest elong. W. 19 15
		3	3	57	♂	♂	♂	♂	stationary.
		6	13	16	♂	♂	♂	♂	stationary.
		7	23	16	♂	♂	♂	♂	♂ + 2 36
		8	5	15	♂	♂	♂	♂	♂ + 2 38
		9	4	48	♂	♂	♂	♂	in ♀
		13	18	56	♂	♂	♂	♂	♂ + 4 36
		13	19	25	♂	♂	♂	♂	in Perihelion.
		14	21	3	♂	♂	♂	♂	♂ + 3 50
		14	22	46	♂	♂	♂	♂	♂ - 2 49
		16	18	20	♂	♂	♂	♂	♂ + 2 31
		17	-	-	☉	♂	♂	♂	Eclipsed, invis. at Wash.
		17	7	38	♂	♂	♂	♂	greatest Hel. Lat. S.
		21	-	-	♂	♂	♂	♂	at greatest brilliancy.
		21	12	49	☐	♂	♂	♂	♂
		24	1	23	♂	♂	♂	♂	♂ - 3 33
		24	2	31	♂	♂	♂	♂	greatest Hel. Lat. N.
		27	19	42	♂	♂	♂	♂	♂ Sup.
	Sept.	4	1	57	♂	♂	♂	♂	♂ + 2 22
		4	10	8	♂	♂	♂	♂	♂ + 2 34
		8	18	37	♂	♂	♂	♂	♂ + 0 16
		11	7	58	♂	♂	♂	♂	♂ + 3 43
		11	10	38	♂	♂	♂	♂	♂ + 3 53
		12	13	30	♂	♂	♂	♂	♂ - 1 11
		16	14	1	♂	♂	♂	♂	in ♀
		16	20	45	♂	♂	♂	♂	♂ - 3 57
		20	12	29	♂	♂	♂	♂	♂ - 3 32
		22	1	25	☉	♂	♂	♂	enters ♄, autumn begins.
		25	2	0	♂	♂	♂	♂	greatest elong. W. 46 9
		26	18	15	♂	♂	♂	♂	in Aphelion.
		29	6	52	♂	♂	♂	♂	greatest Hel. Lat. N.
Oct.		1	1	56	♂	♂	♂	♂	♂ + 2 3
Oct.		1	9	55	♂	♂	♂	♂	♂
		1	14	58	♂	♂	♂	♂	♂ + 2 27
		8	5	34	♂	♂	♂	♂	♂
		8	15	46	♂	♂	♂	♂	♂ + 3 31
		9	15	1	☐	♂	♂	♂	♂
		9	21	59	♂	♂	♂	♂	♂ + 2 57
		11	21	14	♂	♂	♂	♂	♂ - 0 56
		12	12	18	♂	♂	♂	♂	greatest elong. E. 24 54
		12	14	20	♂	♂	♂	♂	in ♀
		16	21	47	♂	♂	♂	♂	♂ - 8 24
		17	4	4	♂	♂	♂	♂	greatest Hel. Lat. S.
		18	2	35	♂	♂	♂	♂	♂ - 3 25
		22	13	9	♂	♂	♂	♂	stationary.
		24	15	12	♂	♂	♂	♂	stationary.
		28	3	5	♂	♂	♂	♂	♂ + 1 56
		28	20	59	♂	♂	♂	♂	♂ + 2 26
	Nov.	4	-	-	♂	♂	♂	♂	transit across ☉'s disk.
		4	13	38	♂	♂	♂	♂	Inf.
		4	21	4	♂	♂	♂	♂	♂ + 3 17
		5	4	4	♂	♂	♂	♂	in ♀
		7	3	58	♂	♂	♂	♂	♂ + 2 5
		9	17	53	♂	♂	♂	♂	in Perihelion.
		10	11	59	♂	♂	♂	♂	♂ - 2 2
		12	11	44	♂	♂	♂	♂	♂ - 2 59
		13	2	0	☐	♂	♂	♂	♂
		13	10	55	♂	♂	♂	♂	stationary.
		14	17	49	♂	♂	♂	♂	♂ - 3 17
		15	5	50	♂	♂	♂	♂	in Perihelion.
		16	6	52	♂	♂	♂	♂	in Perihelion.
		20	1	48	♂	♂	♂	♂	greatest Hel. Lat. N.
		21	4	15	♂	♂	♂	♂	greatest elong. W. 19 51
		24	8	21	♂	♂	♂	♂	♂ + 2 9
		25	4	26	♂	♂	♂	♂	♂ + 2 36
		29	0	34	♂	♂	♂	♂	stationary.
		29	6	51	♂	♂	♂	♂	♂
		2	2	20	♂	♂	♂	♂	♂ + 3 9
		5	3	33	♂	♂	♂	♂	♂ + 1 38
		7	2	12	♂	♂	♂	♂	greatest Hel. Lat. N.
		10	8	31	♂	♂	♂	♂	♂ - 3 13
		12	7	30	♂	♂	♂	♂	♂ - 4 41
		12	8	10	♂	♂	♂	♂	♂ - 3 12
		12	13	10	♂	♂	♂	♂	♂ - 1 28
		13	13	17	♂	♂	♂	♂	in ♀
		20	19	20	☉	♂	♂	♂	enters ♄, winter begins.
		21	18	21	♂	♂	♂	♂	♂ + 2 37
		22	13	5	♂	♂	♂	♂	♂ + 2 46
		23	17	31	♂	♂	♂	♂	in Aphelion.
		25	11	0	♂	♂	♂	♂	stationary.
		26	7	30	☐	♂	♂	♂	♂
		29	9	32	♂	♂	♂	♂	♂ + 3 9
Dec.		30	17	7	☉	♂	♂	♂	in Perigee.

POSITIONS OF THE PRINCIPAL OBSERVATORIES.

(North Latitudes and West Longitudes are considered as positive.)

Place.	Latitude.	Longitude from Washington in Time.	Longitude from Washington in Arc.	Longitude from Greenwich in Arc.
Åbo,	+60° 26' 56.8	— 6 ^h 37 ^m 20.0 ^s	260° 40' 0.6	337° 42' 48.6
Albany,	+42 39 50.0	— 0 13 12.6	356 41 51.0	73 44 39.0
Altona,	+53 32 45.3	— 5 47 57.4	273 0 39.8	350 3 27.8
Ann Arbor,	+42 16 48.0	+ 0 26 41.0	6 40 15.0	83 43 3.0
Athens,	+37 58 20.0	— 6 43 6.4	259 13 24.2	336 16 12.2
Berlin,	+52 30 16.7	— 6 1 46.1	269 33 28.1	346 36 16.1
Bilk,	+51 12 25.0	— 5 35 16.1	276 10 58.1	353 13 46.1
Bonn,	+50 43 45.0	— 5 36 35.7	275 51 5.1	352 53 53.1
Breslau,	+51 6 56.0	— 6 16 21.2	265 54 42.0	342 57 30.0
Brussels,	+50 51 10.7	— 5 25 38.8	278 35 18.0	355 38 6.0
Cambridge (Eng.),	+52 12 51.8	— 5 8 34.7	282 51 18.9	359 54 6.9
Cambridge (Mass.),	+42 22 48.6	— 0 23 41.5	354 4 36.9	71 7 24.9
Cape of Good Hope,	—33 56 3.0	— 6 22 7.2	264 28 12.3	341 31 0.3
Christiania,	+59 54 43.7	— 5 51 6.0	272 13 30.6	349 16 18.6
Cincinnati,	+39 5 54.0	+ 0 29 46.9	7 26 42.8	84 29 30.8
Copenhagen,	+55 40 53.0	— 5 58 30.5	270 22 22.5	347 25 10.5
Cracow,	+50 3 50.0	— 6 28 2.4	262 59 23.4	340 2 11.4
Dorpat,	+58 22 47.1	— 6 55 5.8	256 13 33.6	333 16 21.6
Dublin,	+53 23 13.0	— 4 42 49.2	289 17 42.0	6 20 30.0
Durham,	+54 46 6.4	— 5 1 53.2	284 31 42.0	1 34 30.0
Edinburgh,	+55 57 23.2	— 4 55 28.2	286 7 57.0	3 10 45.0
Florence,	+43 46 40.8	— 5 53 12.9	271 41 47.1	348 44 35.1
Geneva,	+46 11 58.8	— 5 32 48.9	276 47 46.8	353 50 34.8
Georgetown,	+38 54 26.1	+ 0 0 6.2	0 1 33.0	77 4 21.0
Göttingen,	+51 31 47.9	— 5 47 57.3	273 0 40.5	350 3 28.5
Gotha,	+50 56 5.2	— 5 51 6.9	272 13 17.1	349 16 5.1
Greenwich,	+51 28 38.2	— 5 8 11.2	282 57 12.0	0 0 0.0
Hamburg,	+53 33 7.0	— 5 48 4.8	272 58 48.6	350 1 36.6
Hudson,	+41 14 42.6	+ 0 17 32.1	4 23 0.9	81 25 48.9
Kasan,	+55 47 23.1	— 8 24 43.1	233 49 13.1	310 52 1.1
Königsberg,	+54 42 50.4	— 6 30 11.6	262 27 6.6	339 29 54.6
Kremsmünster,	+48 3 23.8	— 6 4 44.6	268 48 50.7	345 51 38.7
Leipsic,	+51 20 20.7	— 5 57 39.7	270 35 4.5	347 37 52.5
Leyden,	+52 9 28.2	— 5 26 8.6	278 27 50.6	355 30 38.6
Liverpool,	+53 24 47.4	— 4 56 11.1	285 57 13.7	3 0 1.7
London,	+51 31 29.8	— 5 7 34.1	283 6 28.5	0 9 16.5
Madras,	+13 4 9.2	—10 29 8.2	202 42 57.0	279 45 45.0
Mannheim,	+49 29 12.9	— 5 42 2.7	274 29 19.5	351 32 7.5
Markree,	+54 10 31.7	— 4 34 22.8	291 24 18.0	8 27 6.0
Marseilles,	+43 17 49.0	— 5 29 40.2	277 34 57.2	354 37 45.2
Milan,	+45 28 0.7	— 5 44 57.8	273 45 32.4	350 48 20.4
Modena,	+44 38 52.8	— 5 51 55.2	272 1 12.5	349 4 0.5
Moscow,	+55 45 19.8	— 7 38 28.1	245 22 58.5	322 25 46.5
Munich,	+48 8 45.0	— 5 54 37.6	271 20 35.4	348 23 23.4
Naples,	+40 51 46.6	— 6 5 12.1	268 41 58.1	345 44 46.1
Olmütz,	+49 35 40.0	— 6 17 11.3	265 42 10.5	342 44 58.5
Oxford,	+51 45 36.0	— 5 3 8.6	284 12 51.0	1 15 39.0
Padua,	+45 24 2.5	— 5 55 40.2	271 4 56.6	348 7 44.6
Palermo,	+38 6 44.0	— 6 1 36.7	269 35 50.1	346 38 38.1
Paramatta,	—33 48 49.8	+ 8 47 42.6	131 55 38.3	208 58 26.3
Paris,	+48 50 13.2	— 5 17 32.7	280 36 50.1	357 39 38.1

Place.	Latitude.	Longitude from Washington in Time.	Longitude from Washington in Arc.	Longitude from Greenwich in Arc.
St. Petersburg, . .	+59° 56' 29.7	^h ^m ^s —7 9 24.7	252° 38' 49.8	329° 41' 37.8
Philadelphia, . . .	+39 57 7.5	—0 7 33.6	358 6 35.4	75 9 23.4
Prague,	+50 5 18.5	—6 5 53.2	268 31 42.6	345 34 30.6
Pulkowa,	+59 46 18.7	—7 9 29.9	252 37 31.9	329 40 19.9
Rome,	+41 53 54.0	—5 58 5.9	270 28 31.5	347 31 19.5
San Fernando, . .	+36 27 45.0	—4 43 22.1	289 9 29.1	6 12 17.1
Santiago,	—33 26 24.8	—0 25 52.3	353 31 55.5	70 34 43.5
Senftenberg, . . .	+50 5 10.1	—6 14 1.1	266 29 43.1	343 32 31.1
Upsala,	+59 51 31.5	—6 18 42.4	265 19 24.0	342 22 12.0
Vienna,	+48 12 35.5	—6 13 43.7	266 34 4.1	343 36 52.1
Washington, . . .	+38 53 39.3	0 0 0.0	0 0 0.0	77 2 48.0
Wilna,	+54 40 59.1	—6 49 23.0	257 39 15.5	334 42 3.5

ON THE ARRANGEMENT AND USE OF THE TABLES IN THIS EPHEMERIS.

THIS Ephemeris is divided into two distinct parts. One part is designed for the special use of NAVIGATORS, and is adapted to the Meridian of Greenwich.

The other part is suited to the convenience of ASTRONOMERS, on this continent particularly, and is adapted to the Meridian of Washington.

THE NAUTICAL PART.

This part contains the Ephemeris of the Sun and Moon; the Distances of the Moon from the centres of the Sun and the four most conspicuous Planets, and from certain Fixed Stars; the Ephemeris of the Planets Venus, Mars, Jupiter, and Saturn; the Mean Places of 100 principal Fixed Stars, for January 1, 1868.

Time. — Astronomers make use of several different kinds of time; an explanation of the nature of which, and of the method of passing from one to another, properly precedes an explanation of the uses of the Ephemeris.

Sidereal Time. — Sidereal Time is measured by the daily motion of the stars, or, as it is used by astronomers, by the daily motion of that point in the equator from which the true right ascensions of the stars are counted.

A *Sidereal Day* is the interval of time between the transit of the vernal equinox over any meridian, and its next succeeding return to the same meridian. It is divided into 24 hours. The sidereal hours are counted from 0 to 24, commencing with the instant of the passage of the true vernal equinox over the upper meridian, and ending with its return to the same meridian.

Solar Time. — Solar Time is measured by the daily motion of the sun. A *Solar Day* is the interval of time between two successive transits of the sun over the same meridian; and the hour angle of the sun is called *Solar Time*. This is the most natural and direct measure of time. But the intervals between the successive returns of the sun to the meridian are not exactly equal, but depend upon the variable motion of the sun in right ascension.

The want of uniformity in the sun's motion in right ascension arises from two different causes; one, that the sun does not move in the equator, but in the ecliptic; the other, that the sun's motion in the ecliptic is not uniform.

To avoid the irregularity in time caused by the want of uniformity in the sun's motion, a fictitious sun, called a *Mean Sun*, is supposed to move in the equator with a uniform velocity.

Mean Time, which is perfectly equable in its increase, is measured by the motion of this *Mean Sun*; the latter at certain periods agrees with the real sun, then again is in advance of it, and at other times is behind it.

True or Apparent Time is measured by the motion of the real sun.

The difference between the *true* and *mean* time is called the *Equation of Time*. By means of it we pass from *true* to *mean* time, or the reverse. Thus, if the *true* time be given, the *mean* time corresponding to it will be obtained by adding or subtracting the equation of time, according to the precept at the head of the column in which it is found, on page I. of the Calendar. If the *mean* time be given, the *true* time is obtained by applying the equation of time as directed by the precept on page II. of the Calendar.

The vernal equinox, by the motion of which Sidereal Time is measured, is not a fixed, but a movable, point on the equator. Its motion is composed of two parts: precession, which is proportional to the time, and is combined with the daily motion of the heavens; and nutation, which is periodical. In consequence of the latter, the daily motion of the equinox is not strictly a uniform measure of time, and the Sidereal Time in common use might therefore be called *Apparent Sidereal Time*, and *Mean Sidereal Time* would be that reckoned from the transit of the mean equinox; but the irregularity referred to cannot exceed $2''.3$ in a period of nineteen years, and is, therefore, of no practical importance.

Day.—According to the customs of society, the hours are counted from 0 to 12 from noon to midnight, after which they are again reckoned from 0 to 12 from midnight to noon. The *civil day* consists of twenty-four hours, but is divided in this manner into two periods, commencing at midnight. In this respect it differs from the *astronomical day*, which commences at noon. The *civil day* comprises twenty-four hours, from one midnight to the next following. The first period of twelve hours is marked A. M., the last period of twelve hours is marked P. M. The *astronomical day* also comprises twenty-four hours, but they are counted from 0 to 24, and from the noon of one day to that of the next following.

The civil day begins twelve hours before the astronomical day; therefore the first part of the *civil day* answers to the last part of the preceding *astronomical day*, and the last part of the *civil day* to the first part of the same *astronomical day*. Thus, January 10th, 2^h A. M., *civil day*, is January 9th, 14^h, *astronomical day*; and January 9th, 2^h P. M., *civil day*, is also January 9th, 2^h, *astronomical day*. The rule, then, for the transformation of the civil time into astronomical time is this: If the civil time is marked A. M., take one from the date, and add twelve to the hours, and the result is the astronomical time wanted; if the civil time is marked P. M., take away the designation P. M., and the astronomical time is had without further change.

The Calendar is divided into twelve months, and to each month are assigned eighteen pages, of which the contents are as follows:—

Pages I., II., III. are devoted to the Ephemeris of the Sun. Page I. contains, first, the *Apparent Right Ascension and Declination* of the sun at Greenwich apparent noon.

The former of these quantities is used for finding the error of a clock regulated to sidereal time. The difference between the time by the clock of the meridian passage of the sun, and the sun's right ascension reduced to apparent noon, is the error of the clock from sidereal time. It is also employed in determining the time by the transit of a fixed star over the meridian, as is explained in page 223 of BOWDITCH'S *American Practical Navigator*. The use of the sun's declination in finding the true amplitude and azimuth, the latitude by altitudes of the sun in and out of the meridian, the time, &c., is also so clearly defined in this standard work, which is in the hands of all American seamen, that any further explanation in this place is unnecessary. Adjoining the columns of *Right Ascension* and *Declination* are the differences of these quantities for one hour (at noon), by means of which they may be calculated for any time out of the meridian, by multiplying this difference by the hours and parts of hours from noon, and adding the amount to, or subtracting it from, the quantity at noon, according as it is increasing or decreasing. If, for example, the declination of the sun were required at 3^h 40^m P. M. of Saturday, January 18th, 1868, the declination of the sun would be taken out first for

January 18th, at noon.

From which subtract the diff. for 1 hour, 30^{''}.22, multiplied by 3,

And the proportional part for 40 minutes,

The result is the sun's declination on the 19th, at 3^h 40^m P. M.,

20° 37' 37".1 S.
1 30.7
20 36 6.4
20.1
20 35 46.3

The difference for one hour is not the same for every hour in the twenty-four; but being given in the pages of this Ephemeris for the first hour of the day, it is sufficiently accurate for the purposes of the navigator.

The column of the *Sun's Semidiameter* requires no explanation.

The column headed *Sidereal Time of the Semidiameter passing the Meridian*, is employed in obtaining the passage of the sun's centre over the wires of a transit-instrument, when the passage of one limb only has been observed. If the western limb has been observed, the quantity found in this column is to be added to the time of transit over the middle wire, or the mean of the times of transit over all the wires; but if the eastern limb has been observed, the quantities in this column are to be subtracted.

The next column contains the *Equation of Time*, which, as has been before explained, is the number of minutes and seconds to be added to or subtracted from the *apparent time*, or the time given by an observation of the sun, to obtain the *mean time*, or the time shown by a clock. The heading of the column directs the manner in which the equation is to be applied, and where there is a change in the course of the month from addition to subtraction, or the reverse, as in the months of April and June, the two different directions are separated by a line, while a corresponding line below points out the date at which the change takes place. The difference for one hour is given in an adjoining column, by means of which the equation for any time from noon is easily obtained. If, for example, the equation of time for January 24th, at 3^h 20^m P. M., were required, we should have

Equation, for January 24, at noon,	^m 12 14.99
Correction for 3 ^h 20 ^m (additive),	2.06
Equation, January 24, at 3 ^h 20 ^m P. M.,	<hr/> 12 17.05

Which, according to the rule at the head of the column, is to be added to *apparent time* to obtain *mean time*.

Page II. contains the Apparent Right Ascension and Declination of the Sun, and the Equation of Time for Greenwich *Mean Noon*; to these is added a column containing the Sidereal Time of Mean Noon.

Page III. contains the Longitude and Latitude of the Sun, and the Logarithm of the Distance of the Earth, at Greenwich Mean Noon of each day. The Longitude is given in two columns, headed λ and λ' ; and one, λ , is the Sun's longitude counted from the true equinox of the date; the other, λ' , is the same coördinate counted from the mean equinox of the beginning of the year. A column of hourly differences enables the computer to obtain the Sun's longitude for any hour from noon. The hourly differences of the logarithm of the Radius Vector are likewise given. The longitudes of the Sun are the true longitudes, not affected by aberration. The last column on this page contains the Mean Time of Sidereal Noon.

Page IV. contains the Moon's *Semidiameter* and *Horizontal Parallax* for every noon and midnight. The former may be corrected for any time between the dates for which it is given in the Ephemeris, by means of Table XL of BOWDITCH'S *Navigator*, or simply by computing the proportional part.

This is readily done by considering that the semidiameter is given for every twelve hours, that the difference, therefore, between any two successive semidiameters corresponds to twelve hours, and that the difference required (or correction) is that difference which corresponds to a time less than twelve hours. If, for example, the semidiameter of the moon is to be taken out for 9 o'clock, P. M., of the 12th of July, then we say, that as twelve hours is to 5".8, the whole difference between the semidiameters at noon and midnight of the 12th, so is nine hours to 4".4, the correction to be added to the semidiameter at noon, because it is increasing; the moon's semidiameter, then, for July 12^d 9^h is 15' 14".2. Adjoining the columns containing the Moon's

Horizontal Parallax for noon and midnight, are columns giving the change which these quantities undergo in one hour. The sign plus or minus (+ or —) is prefixed to these differences, showing whether they are additive or subtractive, or, in other words, whether the horizontal parallax is increasing or decreasing. In order to reduce the parallax to any time intermediate between those dates for which it is given in the Ephemeris, the mode of proceeding is that which has been already explained in the case of the equation of time. The Moon's *Meridian Passage*, which is given on this page to minutes and tenths of minutes, is also accompanied with a column of differences for one hour, by means of which, having the longitudes turned into time, the time of the moon's meridian passage at any other place may be computed. Or it may be more quickly derived from BOWDITCH's Table XVIII., by simple inspection. The last column of this page contains the *Age* of the Moon, to tenths of days, or the time elapsed since the preceding new moon. It requires no explanation.

The pages from V. to XII. inclusive are taken up with the Moon's *Right Ascension and Declination*, which are given for every hour of every day in the month, and are accompanied with columns of differences for every minute of each hour. The right ascension and declination of the moon change so rapidly, that, if they were not given at frequent intervals, the moon would cease to be useful to the practical navigator as a means of determining the latitude and time. These quantities are wanted for Greenwich mean time, which is either taken directly from the face of a well-regulated chronometer, or is obtained by applying the longitude, turned into time, to the local time of the computer. They have only to be corrected for the minutes and seconds of the time at Greenwich. Thus, if the right ascension and declination of the moon were required for Friday, April 3^d 8^h 10^m, we have only to add to the right ascension at 8^h as given in the Ephemeris, viz. to 10^h 1^m 20^s.20, the product of the difference for one minute in the adjoining column multiplied by 10, the product, that is, of 2^s.3688 by 10, or 23^s.69; the result is the moon's right ascension at the required time, equal to 10^h 1^m 43^s.89. If we were to take out the declination for the same date, the correction for the ten minutes above the hour would be subtractive, because the declination, unlike the right ascension, is decreasing; thus,

Moon's declination for April 3 ^d 8 ^h	11° 31' 50.2" N.
Correction for 10 ^m is 93".8	1 33.8
Moon's declination for April 3 ^d 8 ^h 10 ^m	11 30 16.4

The last page of the right ascensions and declinations contains the *Phases* of the Moon, and the dates of the Moon's *Perigee* and *Apogee*, or least and greatest distances from the earth.

The remaining six pages of the month are occupied by the *Lunar Distances*. They are given in the same manner as in the British *Nautical Almanac*, in order to conform to the rules of BOWDITCH's *Navigator*. These tables contain the geocentric distances of the centre of the moon from the sun, the larger planets, and certain fixed stars, at intervals of three hours, beginning with the noon of each day. All the distances that can be observed on the same day are grouped together under that date, and the letter E. or W. is affixed to the name of the star or planet, to indicate whether it is on the east or west side of the moon. The columns are read from the left to the right, across both pages of the same opening. The principle of determining the longitude by means of lunar distances consists in this: that they furnish the navigator with the means of comparing his own time, on board ship, with the time at the Greenwich Observatory. At the moment of observing a distance he notes the time by his own watch or chronometer, and by looking into the Ephemeris he discovers what o'clock it is at Greenwich when the moon and star are in the relative position with regard to each other which he has measured with his sextant. But it will very rarely occur that the navigator's *true distance*, that is, his observed distance cleared from the effects of refraction and

lunar parallax, will be found in the Ephemeris. It will prove in most cases to be a quantity lying between two given distances. He is obliged, therefore, to take the difference between his own true distance and the one nearest to it in the pages of the Ephemeris, and to apply to the time standing over the latter a correction proportioned to this difference. This is a case of the simple rule of three. Owing, however, to the various denominations of space and time that enter into the question, it has been found convenient to lessen the labor of the operation by putting between every two successive distances given in the Ephemeris the proportional logarithm of their difference. This proportional logarithm is obtained by subtracting the logarithm of the difference of the two distances from the logarithm of three hours (both quantities being reduced to seconds), because three hours is the interval of time between two successive distances.

On the 5th of April, at midnight, of Greenwich mean time, the distance of the moon's centre from the planet Saturn, east of her, is $65^{\circ} 51' 37''$, and at fifteen hours of the same date it is $64^{\circ} 4' 45''$; the difference between the two distances is $1^{\circ} 46' 48''$, or, reduced to seconds, is 6408'', the logarithm of which, subtracted from the logarithm of three hours, or 10800'', gives for the proportional logarithm of the difference between the two distances 2264, as it is in the column headed *P. L. of Diff.* If the calculated *true distance* of the navigator lie between the two given distances above mentioned, as, for instance, if it should be $65^{\circ} 3' 20''$, the corresponding correction of the time would be found as follows:—

Distance in the Ephemeris at Midnight,	$65^{\circ} 51' 37''$
Calculated <i>True Distance</i> ,	$65^{\circ} 3' 20''$
Difference,	$0^{\circ} 48' 17''$
Prop. log. in Ephemeris,	2264
Prop. log. of Difference, $0^{\circ} 48' 17''$,	<u>5715</u>
Prop. log. of $1^{\text{h}} 19^{\text{m}} 28^{\text{s}}$,	8551

And this time is to be added to the time at the head of the column from which the distance of the Ephemeris was taken, which would make the time at Greenwich corresponding to the Navigator's True Distance $1^{\text{h}} 19^{\text{m}} 28^{\text{s}}$ on the morning of the 6th of April.

This method of getting the Greenwich time between two given times in the Ephemeris rests upon the supposition, that the variation between one distance and the next following is uniform and regular. But owing to the inequalities in the moon's motion, this is not the case; and it is, in consequence of this, necessary to apply to the Greenwich time obtained by the preceding method a small correction.

This correction, due to the second differences in the moon's motion, is given in the Table on page 7 of the Appendix, and is taken out and applied as follows.

The top of the Table is entered with the difference between that proportional logarithm of the Ephemeris which has already been used and the one next following, and the side of the Table is entered with the time which has been added to that at the head of the column of the Ephemeris, that is, the time given by the difference of the proportional logarithms at the close of the preceding paragraph; under the former, and opposite the latter, will be found the correction, in seconds of time, to be added to the time at Greenwich if the proportional logarithms are decreasing, but subtracted if they are increasing.

The Ephemeris of the Planets, from page 218 to page 241, consists of the apparent right ascension at Greenwich mean noon and its variation for one hour, the apparent declination at the same date and its variation for one hour, and the mean time of their meridian passage; and at the bottom of the page will be found the semidiameter and horizontal parallax. The hourly variations belong to noon of the day on which they are given. The mode of correcting by means of the hourly variation for any time from noon has already been explained.

The Solar Coördinates for Greenwich mean noon, on pages 242 - 244, are added, and the Moon's Longitude and Latitude on pages 245 - 248.

Finally, the Mean Places of one hundred and ninety-eight Fixed Stars with their annual variations for the beginning of the year 1868, are given on pages 262 - 265.

When the latitude is to be deduced from the meridian altitude of one of these stars, its time of passing the meridian can be ascertained by taking the sum of the right ascension of the star, and the mean time of sidereal noon contained in the last column of page III. of each month. The right ascension of the star is, in fact, its hour angle, or difference in time, from the sidereal noon, or 0^h. If then, a vessel in longitude 45° West should wish to obtain the latitude by a meridian observation of a star, as, for example, α TAURI (*Aldebaran*), on the evening of January 1, 1868, the process for obtaining the time of meridian passage would be as follows:—

Mean Time of sidereal 0 ^h January 1, 1868,	$\begin{matrix} h & m & s \\ 5 & 17 & 25 \end{matrix}$
Correction for Longitude omitted.	
Right Ascension of α TAURI (<i>Aldebaran</i>),	$\begin{matrix} 4 & 28 & 21 \end{matrix}$
Time of star's meridian passage,	$\begin{matrix} 9 & 45 & 46 \end{matrix}$

The instant of passage might be more accurately determined by making an allowance for the difference between mean solar and sidereal time, and by applying the correction for longitude; but the above is sufficiently near for the purpose for which it is wanted, which is, to know the period of meridian passage approximately, in order to identify the star if necessary, and to be in time with the observation. The navigator will perceive that the dates in this column of page III. are astronomical, and will observe the distinctions of time explained in the first part of this article; he will also remember that when the sum exceeds 24 hours, 24 hours are to be subtracted, and a unit is to be added to the day of the month.

The Sun's Right Ascension may also be used for finding the time of meridian passage of a star, as shown in BOWDITCH's *Navigator*, p. 223.

THE ASTRONOMICAL PART.

THIS part is adapted to the meridian of Washington.

Obliquity of the Ecliptic, &c., p. 250. — On this page are given the apparent obliquity, the equation of equinoxes in longitude and right ascension, the precession of equinoxes in longitude, and the sun's aberration and horizontal parallax, for every ten days of the year; at the bottom of the page will be found the mean obliquity for the beginning of the year, the precession for the middle of the year, the logarithm of the precession in a sidereal day, and the logarithm of the precession in a solar day. On the same page, the mean longitude of the moon's ascending node is also given for every ten days, and at the bottom of the page its daily motion.

Fixed Stars. — The Logarithms of BESSEL's A, B, C, D, for correcting the places of the Fixed Stars, are given for the mean midnight of every day of the year, and the constants of reduction for every midnight. To these tables are added BESSEL's formulas of reduction, by which the tabular quantities were computed, with PETERS's coefficients, and BESSEL's notation. (Pages 251–261.)

The mean places of 198 Fixed Stars are given for the instant when the sun's mean longitude was 280° (1868, Jan. 1^d — .649). Those of 52 *circumpolar* stars (stars within 25° of either pole) are given on page 262, and those of 146 *time* stars (stars within 65° of the equator) on pages 263–265. The *apparent* places of α , ϵ , δ , and λ , Ursæ Minoris, are given for every upper transit at Washington, pages 266–277; and the *apparent* places of the remaining 48 *circumpolar* stars on pages 278–290, and of the 146 *time* stars on pages 291–327, for every tenth transit, together with *ten times* their *daily* motion at transit. The approximate time of each transit is given in mean solar days and tenths of a day.

In the Appendix will be found Tables III., IV., and V., which give corrections of the apparent places of several circumpolar stars, and of the constants A and B, for small terms of nutation.

Solar Ephemeris, pp. 328–333. — In the Solar Ephemeris, given for Washington mean and apparent noon, the hourly motions in right ascension and declination are the motions at the instant of noon. Only the seconds of right ascension and declination are given for apparent noon, the hours, or degrees, and minutes being usually the same as for mean noon.

Moon Culminations. — Pages 334–336 contain the mean solar time of the upper transit of the moon's centre at Washington, expressed to hundredths of a minute, for convenience of taking out the moon's right ascension at this time from the Lunar Ephemeris. By means of the hourly difference given for the instant of Washington transit, the time of transit at any place within six hours of Washington in longitude may be found with sufficient accuracy by using the hourly difference interpolated for a longitude half that of the given place. The sidereal time of semidiameter passing the meridian at Washington is given in the next column. By the numbers in the fifth column are indicated the four moon-culminating stars, the two next preceding and two next following the moon, proper to be observed with the moon at each transit; the numbers are those of the stars in the list of *moon-culminating stars*. The bright limb of the moon is indicated by a Roman numeral in the last column. The right ascension of the bright limb at its transit over any meridian may be found as follows: Suppose it were required for the transit of October 5, at Upper Astoria, Oregon, in longitude,

$$\text{W. from Washington } 3^{\text{h}} 6^{\text{m}}.966 = 8^{\text{h}}.116 = 0^{\text{d}}.130.$$

$$\text{W. from Greenwich } 8^{\text{h}} 15^{\text{m}}.15.$$

The transit of the moon's centre at Upper Astoria occurs at

$$15^h 22^m.10 + 3.116 (2^m.177) = 15^h 28^m.89 \text{ Upper Astoria time,} \\ = 23^h 44^m.04 \text{ Greenwich time,}$$

at which time we find, on page 169,

$$\text{Moon's R. A.} = 4^h 28^m 52^s.45 + 44.04 (2^s.2708) = 4^h 30^m 32^s.46, \\ \text{Approximate Dec.} = +16^\circ 49'.$$

The above hourly motion ($2^m.177$) is found by interpolating to $0^d.065$ in advance of that given on page 336, and the change of right ascension in 1^m ($2^s.2708$) by interpolating 22^m in advance of that given on p. 169 for Oct. 5 23^h . Since the bright limb is II., the following one, the correction for time of semidiameter passing the meridian, taken from the fourth column on page 336, and interpolated to $0^d.130$ in advance, is to be added to the right ascension of centre. This gives for the right ascension of the bright limb, at its transit at Upper Astoria,

$$4^h 30^m 32^s.46 + 67^s.51 = 4^h 31^m 39^s.97.$$

Moon-Culminating Stars, pp. 337–340. — The mean places, with their annual variations of 174 stars near the moon's path are given for the beginning of the fictitious year (Jan. 1^d — .649). The names of 35 of them, whose apparent places are given in the Ephemeris of the *Fixed Stars* are printed in SMALL CAPITALS.

The apparent places of the others may be obtained by the quantities and formulas on pages 254–261. Thus, the approximate right ascension and declination of ν Tauri (one of the four stars corresponding to the transit of the last example), from page 337, being

$$\alpha = 4^h 18^m 25^s = 64^\circ 36', \quad \delta = +22^\circ 31',$$

the computation of its apparent right ascension proceeds as follows for transit at Upper Astoria at Oct. 5^d.77 Washington mean time. The quantities from page 259 being taken for a date $0^d.27$ after midnight of Oct. 5th, for which they are given there,

$G = 32^\circ 32'$	$\log g = 1.1103$	$\log h = 1.2753$	$E = -0.03$
$G + \alpha = 97 \quad 8$	$\log \sin (G + \alpha) = 9.9966$	$\log \sin (H + \alpha) = 9.8085$	$f = +24.98$
$H = 75 \quad 21$	$\log \tan \delta = 9.6176$	$\log \sec \delta = 0.0344$	$+ 5.30$
$H + \alpha = 139 \quad 57$	0.7245	1.1182	$+ 13.13$
	$+ 5''.30$	$+ 13''.13$	$\alpha' - \alpha = +43.38$
			$= +2^s.89$

whence $\alpha' = 4^h 18^m 24^s.72 + 2^s.89 = 4^h 18^m 27^s.61.$

The *Ephemeris of the Moon*, pp. 341–344, and the *Moon's Phases*, p. 345, require no special observation. In the moon's ephemeris, as in that of the sun, the hourly motions belong to the instant for which they are given. The position of the *Moon's Equator* and the *Moon's mean longitude* are given on page 346.

The ephemerides of the two interior planets (pp. 347–358) are given for mean noon and the time of transit, and those of the exterior planets (pp. 359–388) for sidereal noon and the time of transit. The column "day of the month" for the exterior planets contains the mean time of sidereal noon expressed in days and tenths of a day.

The place of a planet for any number of minutes, t , from the nearest noon for which it is given, t being negative when the time precedes the noon, may be computed by the formulas

$$\alpha = \alpha_0 + a t + b t^2, \\ \delta = \delta_0 + a t + b t^2,$$

α and δ denoting the right ascension and declination required, and α_0, δ_0 , the right ascension and declination for the nearest noon; the logarithms of the coefficients a and b are given with the ephemeris. For an interior planet, t must be expressed in minutes of mean time; for an exterior planet, in minutes of sidereal time.

The *Solar Coördinates* (pp. 391–402) are given for each mean noon and midnight, referred to the apparent equinox and equator, and also to the mean equinox and equator at the beginning of the year. In the case of the rectangular coördinates, only the last four decimals are given for the mean equinox and equator, and the first three places are to be taken from the apparent equinox and equator. When a change of a unit is to be made in the third place, it is indicated by a corresponding colon (:).

The *Planetary Coördinates* (pp. 403–410) are referred to the mean equinox and ecliptic of the mean noon of the 2400,000th day of the Julian Period, and the dates for which they are given are counted from this epoch in mean solar days. They may be converted into days of the Julian Period by adding 2400,000. The columns — $\frac{k^2}{r^3} x$, &c. contain the quantities — $1600 m \frac{k^2}{r^3} x$, — $1600 m \frac{k^2}{r^3} y$, — $1600 m \frac{k^2}{r^3} z$, in units of the 7th decimal place, in which m denotes the mass of the planet, and k^2 the unit of attractive force in the solar system, or $\log k = 8.2355814$.

Eclipses (pp. 411–417). The *Tables of Data of the Solar Eclipses* are adapted to very accurate computation by the following formulas.

$$\begin{aligned} \text{Let } \phi &= \text{the latitude of the place,} \\ \lambda &= \text{its western longitude from Washington,} \\ \log e &= 8.9110635, \\ \log (1 - e^2) &= 9.9971066, \\ \sin \phi' &= e \sin \phi, \\ h &= \sec \phi' \cos \phi, \\ k &= (1 - e^2) \sec \phi' \sin \phi, \\ a &= A - h \sin (\mu - \lambda), \\ b &= B - E k + G h \cos (\mu - \lambda), \\ c &= -C + F k - H h \cos (\mu - \lambda), \\ m &= \sqrt{bc}. \end{aligned}$$

If the instant for computation were correctly chosen at the time of beginning or end of the eclipse, m would be exactly equal to a . If m be not equal to a , the instant for a new computation, which will be an approximation to the actual time of beginning or end, may be found by adding to the preceding time of computation an interval t , which may be obtained in seconds by the formulas,

$$\begin{aligned} \log \mu' &= 1.86167, \\ \tan \frac{1}{2} \psi &= \frac{c}{m} = \frac{m}{b}, \\ a' &= A' - \mu' h \cos (\mu - \lambda), \\ b' &= B' - \mu' G h \sin (\mu - \lambda), \\ t &= \frac{1000000 (m - a)}{a' + b' \cot \psi}; \end{aligned}$$

ψ must be taken of the same sign with a , and is a sufficiently near approximation to the angle of contact from the north towards the east. For the shadow of a total eclipse, ψ must be taken with a sign opposite that of a .

The magnitude of the eclipse is found by taking the difference (with regard to the signs) between the value of ψ at the beginning and its value at the end of the eclipse, and if this difference is denoted by 2θ , the number of digits eclipsed is

$$12 (1 + n) \sin^2 \frac{1}{2} \theta, \quad \text{or, } 12 (1 + n) \cos^2 \frac{1}{2} \theta,$$

Occultations. — The pages 418 to 464, inclusive, are taken up with *Elements for Facilitating the Calculation of Occultations of Planets and Stars by the Moon*. The elements are given for all the stars to the 6½ magnitude, inclusive, contained in the British Association Catalogue, and for those contained in the *Almanac Catalogue of Zodiacal Stars*, which can be occulted by the moon during the year 1868.

The several columns of these pages contain, — 1. the date; 2. the star's name; 3. the star's magnitude; 4. the limiting parallels of visibility; 5. Washington mean time of the moon's true conjunction with the star in right ascension; 6. Washington hour angle, in time, of the star at the time of true conjunction; 7. coördinate q at the time of true conjunction; 8. hourly variation p' of coördinate p ; 9. hourly variation q' of coördinate q ; 10. logarithmic sine of the stars declination; 11. logarithmic cosine of the star's declination.

Designating the time of true conjunction by the usual symbol, δ , we have, at this time, $T = \delta$, $h = H$, $p = 0$, and $q = Y$. For any other time during the occultation, we shall have $T = \delta + (t)$, $h = H +$ sidereal equivalent of (t) , $p = (t)p'$, and $q = Y + (t)q'$. The other elements are considered as constant for the occultation.

In the prediction of an occultation for a particular place, the principal objects of determination are, the instant of *immersion*, or of the star's disappearance behind the moon's limb; of *emersion*, or of the star's reappearance; and the points on the moon's border where these appearances take place.

The calculations are made according to the method of BESSEL, whose original paper on the subject may be found in SCHUMACHER'S *Astronomische Nachrichten*, Vol. VII. p. 1; also in the *Berliner Astronomisches Jahrbuch* for 1831, p. 257.

The process of computation is shown by the following equations:—

λ = Longitude from Washington, of the place, + West, — East.

ϕ = Geographical North Latitude of the place.

ϕ' = Geocentric North Latitude of the place.

r = Earth's radius at the place, or the distance of the observer's position from the earth's centre.

It is unnecessary to calculate ϕ' and r separately, as we have

$$r \sin \phi' = \frac{(1 - e^2) \sin \phi}{\sqrt{(1 - e^2 \sin^2 \phi)}} \quad r \cos \phi' = \frac{\cos \phi}{\sqrt{(1 - e^2 \sin^2 \phi)}}$$

in which e denotes the eccentricity of the earth's meridians.

The logarithms of $\frac{1 - e^2}{\sqrt{(1 - e^2 \sin^2 \phi)}} = \log A$, and of $\frac{1}{\sqrt{(1 - e^2 \sin^2 \phi)}} = \log B$, derived from $e = .081697$, according to the latest determination of BESSEL, may be taken from the following table, where the geographical latitude of the place is the argument.

ϕ	Log A	Log B
0	9.9971	0.0000
10	9.9971	0.0000
20	9.9973	0.0002
30	9.9975	0.0004
40	9.9977	0.0006
50	9.9979	0.0009
60	9.9982	0.0011
70	9.9984	0.0013

$$r \sin \phi' = A \sin \phi$$

$$r \cos \phi' = B \cos \phi$$

$$a = r \cos \phi' \sin (h - \lambda)$$

$$b = r \cos \phi' \cos (h - \lambda)$$

$$\log \mu' = 9.4192$$

$$u = a$$

$$v = r \sin \phi' \cos D - b \sin D$$

$$m \sin M = p - u$$

$$m \cos M = q - v$$

$$u' = b \mu'$$

$$v' = a \mu' \sin D$$

$$n \sin N = p' - u'$$

$$n \cos N = q' - v'$$

$$\log k = 9.4350$$

$$\cos \psi = \frac{m \sin (M - N)}{k}$$

$$Q = 90^\circ - N \mp \psi$$

$$t = -\frac{m}{n} \cos (M - N) \mp \frac{k \sin \psi}{n}$$

Upper signs for Immersion; under signs for Emersion.

$$c \sin C = u + t u'$$

$$c \cos C = v + t v'$$

$$V = Q + C$$

Mean solar time of the star's apparent contact with the moon's limb

$$= T - \lambda + t$$

$$\text{Angle from North Point} = Q$$

$$\text{Angle from Vertex} = V$$

The angle ψ is to be taken out positive and less than 180° . If $\log m \sin (M - N)$ be greater than $\log k$, $\cos \psi$ will evidently be greater than 1, or impossible, and there will be no occultation, except in some rare instances where the moon's limb passes very close to the star, when the $\log \cos \psi$ will result very near 0. In these cases, a recalculation should be made according to the method which follows, using

$$t = -\frac{m}{n} \cos (M - N),$$

which may give $\log m \sin (M - N)$ less than $\log k$, when the star will be occulted. On the other hand, it may happen that, in these cases of very near approach, a first determination may give a $\cos \psi$ less than 1, which a recalculation will show to be impossible. The angle ψ is then to be considered $= 0^\circ$ when $m \sin (M - N)$ is positive, and we shall have $Q = 90^\circ - N$. When $m \sin (M - N)$ is negative, $\psi = 180^\circ$, or $Q = 90^\circ - N + 180^\circ = 270^\circ - N$. We shall also have, at the time of nearest approach,

$$\text{star's distance from moon's limb} = \pi (m \sin (M - N) - .2723),$$

in which π is the moon's horizontal parallax.

By *Angle from North Point* is to be understood the arc included between the star when in contact, and the point where the limb is intersected by an arc of a great circle passing from the moon's centre to the North Pole; and by *Angle from Vertex*, the arc between the star at contact, and the point where the limb is intersected by an arc of a great circle passing from the moon's centre to the zenith. These angles are reckoned from the north point and from the vertex towards the *West* round the circumference of the moon's disc. For the image as seen in an inverting telescope, add to them 180° .

The results obtained by the above equations are only approximate, yet the computed times by immersion and emersion will usually be within one or two minutes of the truth. The error generally increases with the star's distance from the apparent path of the moon's centre, and may, in some cases, amount to several minutes. For an immersion, this error is not of much consequence; but for an emersion, especially of a small star, the time should be determined with greater precision. For this purpose u' and v' must be computed with

$$h' - \lambda = h - \lambda + \frac{1}{2} \mu,$$

μ being the symbol by which we express the sidereal equivalent of t in these equations.

$$\begin{aligned} u' &= r \cos \phi' \mu' \cos (h' - \lambda) \\ v' &= r \cos \phi' \mu' \sin (h' - \lambda) \sin D. \end{aligned}$$

Then with these values of u' and v' , recompute N , n , ψ , and t , by means of

$$\begin{aligned} n \sin N &= p' - u' \\ n \cos N &= q' - v' \\ \cos \psi &= \frac{m \sin (M - N)}{k} \\ t &= -\frac{m}{n} \cos (M - N) \mp \frac{k \sin \psi}{n} \end{aligned}$$

using the M and m obtained by the first computation, and we shall have the time of contact $T - \lambda + t$, generally within a few seconds of the truth.

As a check on the accuracy of the work, we might compute

$$\begin{aligned} u &= r \cos \phi' \sin (h - \lambda + \mu) \\ v &= r \sin \phi' \cos D - r \cos \phi' \sin D \cos (h - \lambda + \mu) \end{aligned}$$

and we should have

$$(p + t p' - u)^2 + (q + t q' - v)^2 = k^2 = 0.0741.$$

But if $m \sin M$, $m \cos M$, $\log n \sin N$, and $\log n \cos N$, have been correctly computed, we shall have the following shorter and more convenient check on the subsequent calculations for the time of contact:

$$(m \sin M + t n \sin N)^2 + (m \cos M + t n \cos N)^2 = k^2 = 0.0741.$$

The elements of computation, H , Y , etc., are given for the instant of the moon's true conjunction with the star in right ascension. It is desirable, however, in computing an occultation for a particular place, to assume a time for the calculation near to the time of the nearest approach of the moon's centre to the star, as seen at that place, and to reduce the elements to this assumed time. This time, for which the nearest tenth of an hour will be sufficiently accurate, will not differ greatly from the time of *apparent* conjunction, as effected by parallax, which may be determined approximately by the following equations. Let $T - d$ be the time of apparent conjunction; then

$$\begin{aligned} (t) &= \frac{\sin (H - \lambda)}{p' \sec \phi - [9.4027] \cos (H - \lambda)} \\ T - \lambda &= \delta - \lambda + (t). \end{aligned}$$

The elements corresponding to the time $T - \lambda$ may then be obtained as follows:

$$\begin{aligned} h - \lambda &= H - \lambda + (\mu) \\ p &= (t) p' \\ q &= Y + (t) q' \end{aligned}$$

Where occultations are to be generally observed, as at astronomical stations, either temporary or permanent, the observer will find an advantage in looking over the list and selecting; beforehand, all those which may be visible at his station, by observing if his latitude be included between the *limiting parallels* for any given occultation, if the time ($T - \lambda$) be favorable as regards the absence of daylight, and if the star's hour-angle ($h - \lambda$) be not greater than its semidiurnal arc for the given latitude.

For obtaining the time

$$T - \lambda = \delta - \lambda + (t),$$

it will be well to tabulate the values of

$$(t) = \frac{\sin(H - \lambda)}{p' \sec \phi - [9.4027] \cos(H - \lambda)}$$

for every half hour of $H - \lambda$ as far as the greatest semidiurnal arc computed for the latitude of the station with a declination of 30° ; and for all values of p' , using two decimal figures, from 0.50 to 0.60.

It will also be found advantageous to have tabulated values of

$$\begin{aligned} u &= r \cos \phi' \sin(h - \lambda) \\ u' &= r \cos \phi' \mu' \cos(h - \lambda) \end{aligned}$$

which should be given for every minute (in time) of $(h - \lambda)$, from 0^h to 6^h . If $(h - \lambda)$ exceeds 6^h , the argument will be $12^h - (h - \lambda)$, instead of $(h - \lambda)$. It will be seen by the equations that u will have the same sign as $\sin(h - \lambda)$, and that u' will have the same sign as $\cos(h - \lambda)$.

In the equation

$$v = r \sin \phi' \cos D - b \sin D$$

the term $r \sin \phi' \cos D$ may be tabulated for every tenth minute of declination, from 0° to 30° .

For a practical application of the preceding formulæ, we will make the calculations for an occultation of the star 48 Virginis, February 11, 1868, as it will appear at the Philadelphia Observatory, in north latitude $39^\circ 57'.1 = \phi$, and east longitude from Washington $0^h 7^m 34^s = \lambda$. The data for computation are given on page 423, and, with the latitude and longitude of the place, are as follows:—

February 11. 48 Virginis. 6.

$\phi + 39^\circ 57'.1$	$H - 2^h 15^m 3^s$	$p' + 0.5591$
$\lambda - 0^h 7^m 34^s$	$\lambda - 0^h 7^m 34^s$	$q' - 0.1884$
$\delta 11^\circ 21.6'$	$H - \lambda - 2^h 22^m 7^s$	$\log \sin D - 8.7119$
$\delta - \lambda 11^\circ 29.2'$	$Y + 0.4771$	$\log \cos D + 9.9994$

Calculation of the Time, $T - \lambda$, and reduction of the elements of computation.

$\log p' 9.747$		$(t) - 1.0$
$\log \sec \phi + 0.115$		
$\log p' \sec \phi =$		
$\log (1) + 9.862$	(Reduced to hours and minutes)	$(t) - 1^h 0^m 0^s$
$\log \text{constant } 9.403$	Sidereal equivalent for (t)	$(\mu) - 1^h 0^m 10^s$
$\log \cos (H - \lambda) + 9.929$		$H - \lambda - 2^h 27^m 29^s$
$\log [9.403] \cos (H - \lambda) =$		$h - \lambda - 3^h 7^m 39^s$
$\log (2) + 9.332$	$H - \lambda + (\mu) =$	$\delta - \lambda 11^\circ 29.2'$
$(2) + .215$	$T - \lambda + (t) =$	$T - \lambda 10^h 29.2^m$
$(1) + .728$	$(t) p' = -1 \times 0.5591 =$	$p - .5591$
$(3) + .513$	$-1 \times -0.1884 =$	$Y + .4771$
$\log (3) + 9.710$	$Y + (t) q' =$	$(t) q' + .1884$
$\log \sin (H - \lambda) - 9.723$		$q + .6655$
$\log \frac{\sin (H - \lambda)}{(8)} =$		
$\log (t) - 0.013$		

Calculation of the times of *Immersion* and *Emersion*, and of the *Angles of Position* of the star and moon.

(Table, page 514, Arg. ϕ)	$\log A$	9.9977	$\log m \sin M$	+7.2041
	$\log \sin \phi$	+9.8076	$\log m \cos M$	+6.8451
$\log A \sin \phi =$	$\log r \sin \phi'$	+9.8053	$\log \tan M$	+0.3590
	$\log \cos D$	+9.9904	$\log \sin M$	+9.9630
	$\log r \sin \phi' \cos D$	+9.8047	$\log m$	+7.2421
(Table, page 514, Arg. ϕ)	$\log B$	0.0006	$\log n \sin N$	+9.6247
	$\log \cos \phi$	+9.8846	$\log n \cos N$	-9.2923
$\log B \cos \phi =$	$\log r \cos \phi'$	+9.8852	$\log \tan N$	-0.3324
	$\log \sin (h - \lambda)$	-9.8635	$\log \sin N$	+9.9575
$\log r \cos \phi' \sin (h - \lambda) = \log u = \log a$		-9.7487	$\log n$	+9.6672
	$\log \cos (h - \lambda)$	+9.8345	$-\log \frac{m}{n}$	-7.5749
$\log r \cos \phi' \cos (h - \lambda) =$	$\log b$	+9.7197	$\log \cos (M - N)$	+9.8205
	$\log \mu'$	.94192	$-\log \frac{m}{n} \cos (M - N) =$	$\log (1) - 7.3954$
	$\log a \mu'$	-9.1679	$\log \sin (M - N)$	-9.8750
	$\log \sin D$	-8.7119	$\log m \sin (M - N)$	-7.1171
	$\log b \sin D$	-8.4316	$\log k$	9.4350
$\log a \mu' \sin D =$	$\log v'$	+7.8798	$\log \frac{m \sin (M - N)}{k} =$	$\log \cos \psi - 7.6821$
$\log b \mu' =$	$\log u'$	+9.1389		$\log \sin \psi + 0.0000$
	$r \sin \phi' \cos D +$	.6378		$\log k \sin \psi + 9.4350$
	$b \sin D -$	.0270	$\log \frac{k \sin \psi}{n} =$	$\log (2) + 9.7678$
$r \sin \phi' \cos D - b \sin D =$	v	+ .6648		(1) - .0025
	$q +$	.6655		(2) + .5859
$q - v =$	$m \cos M$	+ .0007	For Immersion, (1) - (2) =	$t_1 - .5884$
	$p -$	.5591	For Emersion, (1) + (2) =	$t_2 + .5834$
	$u -$	.5607		$\log t_1 - 9.7697$
$p - u =$	$m \sin M$	+ .0016		$\log u' + 9.1389$
	$q' -$	.1884		$\log t_1 u' - 8.9086$
	$v' +$	.0076		$\log v' + 7.8798$
$q' - v' =$	$n \cos N$	- .1960		$\log t_1 v - 7.6495$
	$p' +$	.5591		$t_1 v' - .0045$
	$u' +$	.1377		$v + .6648$
$p' - u' =$	$n \sin N$	+ .4214	$v + t_1 v' =$	$c \cos C + .6603$
	M	66° 22'		$t_1 u_1 - .0810$
	N	114° 57'		$u - .5607$
	$M - N$	311° 25'		$c \sin C - .6417$
	$90^\circ - N$	335° 3'	$u + t_1 u' =$	$\log c \sin C - 9.8073$
	ψ	90° 17'		$\log c \cos C + 9.8197$
For Immersion, $90^\circ - N - \psi =$	Q	244° 46'		$\log \tan C - 9.9876$

IMMERSION: Observatory Mean Time

(Reduced to hours and minutes,)

$T - \lambda$ 10 29.2
 t_1 0 35.3
 $T - \lambda + t_1$ 9 53.9

Immersion Angle from North Point =

Immersion Angle from Vertex = $Q + C$ =

C 74° 11'
 Q 244° 46'
 V 200° 35'

EMERSION: Observatory Mean Time

(Reduced to hours and minutes,)

$t_2 + 0$ 35.0
 $T - \lambda + t_2$ 11 42

Calculation of a more accurate time, etc., of *Emersion*.

	$h_2 - 1 - 3 \begin{smallmatrix} h \\ m \\ s \end{smallmatrix} \begin{smallmatrix} 7 \\ 39 \end{smallmatrix}$	From first determination,	$M \begin{smallmatrix} ^\circ \\ ' \end{smallmatrix} \begin{smallmatrix} 66 \\ 22 \end{smallmatrix}$
Sidereal equiv. for $\frac{1}{2} t_2 =$	$\frac{1}{2} \mu_2 + 0 \begin{smallmatrix} 17 \\ 33 \end{smallmatrix}$		$N \begin{smallmatrix} ^\circ \\ ' \end{smallmatrix} \begin{smallmatrix} 115 \\ 27 \end{smallmatrix}$
$k - 1 + \frac{1}{2} \mu_2 =$	$h_2 - 1 - 2 \begin{smallmatrix} 50 \\ 6 \end{smallmatrix}$		$M - N \begin{smallmatrix} ^\circ \\ ' \end{smallmatrix} \begin{smallmatrix} 310 \\ 55 \end{smallmatrix}$
	$\log \cos (h_2 - 1) + 9.8674$		$90^\circ - N \begin{smallmatrix} ^\circ \\ ' \end{smallmatrix} \begin{smallmatrix} 334 \\ 33 \end{smallmatrix}$
	$\log r \cos \phi' + 9.8852$		$\psi \begin{smallmatrix} ^\circ \\ ' \end{smallmatrix} \begin{smallmatrix} 90 \\ 17 \end{smallmatrix}$
	$\log \mu' \begin{smallmatrix} 9.4192 \end{smallmatrix}$	For Emersion, $90^\circ - N + \psi =$	$Q \begin{smallmatrix} ^\circ \\ ' \end{smallmatrix} \begin{smallmatrix} 64 \\ 50 \end{smallmatrix}$
$\log r \cos \phi' \mu' \cos (h_2 - 1) =$	$\log u' + 9.1718$		$(1) - .0025$
	$\log \sin (h_2 - 1) - 9.8299$		$(2) + .5988$
	$\log r \cos \phi' \mu' + 9.3044$		$t + .5963$
	$\log \sin D - 8.7119$	$(1) + (2) =$	$\log t + 9.7755$
$\log r \cos \phi' \mu' \sin (h_2 - 1) \sin D =$	$\log v' + 7.8462$		$\log n \sin N + 9.6134$
	$v' + .0070$		$\log n t \sin N + 9.3889$
	$q' - .1884$		$\log n \cos N - 9.2909$
$q' - v' =$	$n \cos N - .1954$		$\log n t \cos N - 9.0664$
	$u' + .1485$		$n t \cos N - .1165$
	$p' .5591$	From first determination,	$m \cos M + .0007$
$p' - u' =$	$n \sin N + .4106$	$m \cos M + n t \cos N =$	$(3) - .1158$
	$\log n \sin N + 9.6134$		$n t \sin N + .2448$
	$\log n \cos N - 9.2909$	From first determination,	$m \sin M + .0016$
	$\log \tan N - 0.3225$	$m \sin M + n t \sin N =$	$(4) .2464$
	$\log \sin N + 9.9557$		$(4)^2 .0607$
	$\log n + 9.6577$		$(3)^2 .0135$
From first determination,	$\log m + 7.2421$	$(3)^2 + (4)^2 = k^2 = 0.0741,$	Check .0742
	$-\log \frac{m}{n} - 7.5844$		$\log u' + 9.1718$
	$\log \cos (M - N) + 9.8162$		$\log t u' + 8.9473$
	$\log \sin (M - N) - 9.8783$		$\log v' + 7.8462$
	$\log m \sin (M - N) - 7.1204$		$\log t v' + 7.6217$
	$\log k \begin{smallmatrix} 9.4350 \end{smallmatrix}$		$t v' + .0042$
$\log \frac{m \sin (M - N)}{k} =$	$\log \cos \psi - 7.6854$	From first determination,	$v + .6648$
	$\log \sin \psi + 0.0000$	$v + t v' =$	$c \cos C + .6690$
	$\log k \sin \psi + 9.4350$		$t u' + .0886$
$\log \frac{k \sin \psi}{n} =$	$\log (2) + 9.7773$	From first determination,	$u - .5607$
$-\log \frac{m}{n} \cos (M - N) =$	$\log (1) - 7.4006$	$u + t u' =$	$c \sin C - .4721$
			$\log c \sin C - 9.6740$
			$\log c \cos C + 9.8254$
			$\log \tan C - 9.8486$
			$T - 1 \begin{smallmatrix} h \\ m \end{smallmatrix} \begin{smallmatrix} 10 \\ 29.2 \end{smallmatrix}$
		(Reduced to hours and minutes,)	$t + 0 \begin{smallmatrix} 35.8 \end{smallmatrix}$
EMERSION: Observatory Mean Time		$T - 1 + t$	$11 \begin{smallmatrix} 50 \end{smallmatrix}$
			$C - 35 \begin{smallmatrix} ^\circ \\ ' \end{smallmatrix} \begin{smallmatrix} 13 \end{smallmatrix}$
Emersion Angle from North Point =		Q	$64 \begin{smallmatrix} ^\circ \\ ' \end{smallmatrix} \begin{smallmatrix} 50 \end{smallmatrix}$
Emersion Angle from Vertex = $Q + C =$		V	$29 \begin{smallmatrix} ^\circ \\ ' \end{smallmatrix} \begin{smallmatrix} 37 \end{smallmatrix}$

The last three pages of the Occultations contain a list of such occultations and near approaches as will be visible at Washington during the year 1868. For the latter, the time of nearest approach is given, followed by the distance of the star from the moon's limb at this time.

In the Appendix will be found a list of occultations visible between 30° and 45° north latitude and $1^h 30^m$ and 3^h longitude west from Washington during the year 1867, predicted by means of the instrument invented by Rev. THOMAS HILL. The times of immersion and emersion, in Washington mean time, and the angle from the vertex, are given for every 5° of latitude and every 30^m of longitude between the above limits, and can easily be found by interpolation for any intermediate points.

This list gives most of the occultations, but not *every* occultation, visible at any given place within the above limits.

The Tables of *Jupiter's Satellites*, pp. 465 – 498, embrace, —

A list of the occultations, eclipses, transits, and transits of shadows, in the order of the time of the occurrence of the phenomena for the satellites taken promiscuously. They are given for every month, accompanied with a diagram, constructed for the eclipse which occurs nearest the middle of the month, showing the phases of the eclipses for an inverting telescope.

A table containing the mean time of the geocentric superior conjunction, and the rectangular coördinates of the satellites corresponding to the time from the next preceding superior conjunction, at intervals of twenty minutes for the first satellite, of forty minutes for the second, of one hour and twenty minutes for the third, and of three hours for the fourth satellite. They are also given for the time of eclipse for the first, second, and third satellites at intervals of seven days, and for the fourth for every eclipse. They enable the astronomer to obtain the configurations at all times. They are given in seconds of arc.

The coördinates have their origin in the centre of the primary, and are referred to the major and minor axes of the apparent ellipse described by the path of the satellite.

The major axis of this ellipse is constant, for the earth's mean place; but the minor axis takes all values from the positive and negative maxima to zero, owing to the changes in the earth's elevation above the plane of the satellite's orbit.

The values in the table correspond to the maximum value of the conjugate axis, as seen from the sun or that of the mean maximum for the earth (which is a constant value). Factors are given in an adjoining column, at intervals of seven days for the first, second, and third satellites, and seventeen days for the fourth, to reduce the above values to those corresponding to the axis for the time being; also for the same intervals, the angle of inclination of the northern semi-minor axis to the circle of declination.

x is positive after superior conjunction, or on the east side of the planet; negative before superior conjunction, or on the west side. y will be positive north, negative south. The eclipses, occultations, &c. of the satellites, visible at Washington, that is, those which occur when the sun is 8° below and Jupiter 8° above the horizon, are distinguished by a W. placed after the name of the phase.

Page 499 contains the Elements of *Saturn's ring* and the *apparent discs of Venus and Mars*; and pages 500 – 501, the *planetary constellations*, which require no explanation.

APPENDIX.

CONSTRUCTION OF THE ASTRONOMICAL AND NAUTICAL EPHEMERIDES FOR 1868.

THE Precession of the Equinoxes, the Mean Obliquity of the Ecliptic, and the Constant of Aberration (p. 250) are taken from STRUVE and PETERS. They are:—

$$\begin{aligned}\text{Precession}^* &= 50''.2411 + 0''.0002268t, \\ \text{Obliquity}^\dagger &= 23^\circ 27' 54''.22 - 0''.4645t - 0''.0000014t^2, \\ \text{Aberration}^\ddagger &= 20''.4451 \pm 0''.0111,\end{aligned}$$

in which t is the number of years after 1800.

The Nutation of the Apparent Obliquity and the Equation of the Equinoxes are computed from PETERS' formulas given in his *Numerus Constans Nutationis*, pp. 46–48, and reprinted in the volume of this Ephemeris for 1855. These quantities have been used in all computations relating to the Fixed Stars.

In the Ephemerides of the Sun, of the Moon, and of the Planets, the obliquity of the ecliptic of HANSEN's *Tables of the Sun* has been used; no reduction for the difference, $0''.37$, by which HANSEN's exceeds PETERS' obliquity having been made in this volume.

The General Constants for Star Reduction are computed from tables adapted to the formulas given on page 261.

The Mean Places of 48 Northern Circumpolar Stars, and the Mean Right Ascension of 128 "Time Stars," have been taken from the *Standard Mean Right Ascensions of Circumpolar and Time Stars, prepared for the use of the U. S. Coast Survey* by Dr. B. A. GOULD. Washington, 1862. The Mean Places of 4 Southern Circumpolar Stars are from the Mean Places of "100 Principal Fixed Stars for Jan. 1, 1840," printed in the *British Nautical Almanac* for 1848. The Mean Declinations of the "Time Stars" have been derived from the Mean Declinations for the beginning of the year 1865, the authorities for which may be found by reference to the Appendix to the *American Ephemeris and Nautical Almanac* for 1865.

In the Nomenclature of the Fixed Stars, (H.) signifies that the star is denoted by HEVELIUS' number, (B.) that the notation of BODE is used. Duplicate notations have been added where it would facilitate reference to ARGELANDER's *Uranometria Nova*. "Groombridge 2320" is the star 87 (B.) Draconis, and "12 Year Cat. 1879" is the last star in Draco in the *Uranometria Nova*.

The magnitudes, except of stars south of — 40° dec., are ARGELANDER's.

The reductions from the Mean to the Apparent Places of the Stars contained in WOLFGANG'S

* PETERS' *Numerus Constans Nutationis*, p. 71.

† Ibid., pp. 66 and 71.

‡ STRUVE'S *Constant de l'Aberration*, p. 47.

APPENDIX.

Tabulæ Reductionum have been taken directly from that work; except that for Polaris — $0^{\circ}.07 \tau^2$ has been applied to the right ascensions, and the term depending on $\mathfrak{C} - \Gamma'$ omitted; and generally the proper motions derived from the authorities referred to in the Ephemeris for 1865 have been employed.

The reductions of the remaining 154 stars have been taken from tables similar to those of WOLFERS, and soon to be published. They include the terms of BESSEL's formulas (with PETERS' coefficients) given on page 261, except the two small terms in the value of E . The terms $-\frac{1}{2} \frac{d^2 a}{d\tau^2} \tau^2$, $-\frac{1}{2} \frac{d^2 \delta}{d\tau^2} \tau^2$ have also been taken into account, when sensible; and for 51 Cephei, λ Ursæ Minoris, and σ Octantis, the terms arising from the squares and products of the aberration and lunar nutation, the formulas for which will be found in the Introduction of WOLFERS' *Tabulæ Reductionum*.

The terms depending on $2 \mathfrak{C}$ have also been applied to the four stars whose places are given for every day. The table on page 14 of the Appendix contains the values of these terms for seven circumpolar stars, computed for 1870.0.

The right ascension of Sirius includes the term given by PETERS,*

$$q = 0^{\circ}.127 + 0^{\circ}.00050 (t - 1800) + 0^{\circ}.171 \sin (u + 77^{\circ} 44'),$$

in which u , the eccentric anomaly from the inferior apsis, is found by the formula

$$u - e \sin u = n (t - T),$$

from the elements

T = Passage through the inferior apsis	1791.431
n = Mean annual motion in orbit	$7^{\circ}.1865$
Period of revolution	$50^{\circ}.093$
e = Eccentricity	0.7994

The Mean Places of the Moon-culminating Stars have been taken from the *Almanac Catalogue of Zodiacal Stars, printed for the use of the American Ephemeris and Nautical Almanac*, Bureau of Navigation, Washington, 1864.

The Ephemeris of the Sun is constructed from the Tables of HANSEN and OLUFSEN, Copenhagen, 1853. In the computation of the Sun's Geocentric Coördinates, regard has been had to the sun's latitude; the computation has been made by means of the formulas given in the *Construction of the Almanac* for 1855.

ENCKE's discussion of the Transits of Venus in 1761 and 1769, in his *Der Venusdurchgang von 1769, &c.*, has furnished the standard

Equatorial Horizontal Parallax at the Earth's Mean Distance = $8''.5776$.

Later discussions give a value $0''.3$ greater.

The Sun's Semidiameter at the Earth's Mean Distance has been taken equal to $16' 2''$.

The Ephemeris of the Moon has been constructed from PEIRCE's *Tables of the Moon*, with the *Tables of the Moon's Parallax*, constructed from WALKER's and ADAMS' formulas, and arranged as a supplement to the first edition of PEIRCE's *Tables of the Moon*.

The Semidiameter of the Moon at the Earth's Mean Distance is taken to be $\frac{1}{150}$ part greater than that given by BURCKHARDT, although that given by BURCKHARDT is probably better adapted to the computation of eclipses and occultations.

The Ephemeris of Mercury has been derived from the Tables of Prof. WINLOCK, which are based on the theory of LE VERRIER, published in the *Additions to the Connaissance des Temps* for 1848.

The Ephemeris of Venus has been derived from manuscript Tables, constructed from LINDENAU's Tables, in a form similar to that adopted for the Lunar Tables: applying AIRY's

* *Astronomische Nachrichten*, Nr. 748, "Elemente V."

CONSTRUCTION OF THE ALMANAC.

Long Equation and the corrections proceeding from the discussion, by the method of Least Squares, of Mr. HUGH BREEN's results contained in his paper on the *Corrections of LINDENAU's Elements of the Orbit of Venus, &c.*, published in the *Memoirs of the Royal Astronomical Society*, Vol. XVIII.; and adopting the secular variations of the elements from LE VERRIER's *Memoir on the Determination of the Secular Inequalities of the Planets*, which appeared in the *Connaissance des Temps* for the year 1844. The following are the corresponding corrected elements, and annual variations for Washington, 1855.0.

$$\begin{aligned} L &= 289^{\circ} 51' 58''.5 \\ \pi &= 129\ 32\ 59.6 + 49''.57459\ t. \\ \Omega &= 75\ 23\ 27.8 + 32.88424\ t. \\ i &= 3\ 23\ 34.6 + 0.04363\ t. \\ e &= 1410''.6847 - 0.11157\ t. \\ n &= 2106641.438 \\ a &= 0.7233328 \end{aligned}$$

The Ephemeris of Mars is derived from manuscript Tables constructed from LINDENAU's Tables in the same manner as the Tables of Venus. Mr. HUGH BREEN's results contained in his paper *On the Corrections of LINDENAU's Elements of Mars*, published in the *Memoirs of the Royal Astronomical Society*, Vol. XX., have also been discussed and applied; and LE VERRIER's secular variations of the elements are likewise adopted. The following are the corresponding corrected elements, and secular variations for Washington, 1855.0.

$$\begin{aligned} L &= 320^{\circ} 13' 33''.71 \\ \pi &= 333\ 23\ 17.80 + 65''.99145\ t. \\ \Omega &= 48\ 25\ 55.18 + 27.68294\ t. \\ i &= 1\ 51\ 2.20 - 0.02141\ t. \\ e &= 19238''.75 + 0.18549\ t. \\ n &= 689050.9028 \\ a &= 1.5236878 \end{aligned}$$

The Ephemeris of Jupiter is derived from manuscript Tables constructed from BOUVARD's Tables, with such changes as were required to make them correspond more nearly to the formulas.

The Ephemeris of Saturn is also derived from manuscript Tables constructed from the Tables of BOUVARD, with changes having the same object. The mass of Jupiter given by BESSEL has been adopted and used.

This mass = $\frac{1}{1047.879 \pm 0.235}$ of the sun's mass.

The following corrections of the elements have also been introduced for 1865:—

corr. mean long.	= +4''.9
corr. long. of node	= -143''.4
corr. inclination	= -5''.7.

The Ephemeris of Uranus is derived from the elliptical portion of BOUVARD's Tables, with LE VERRIER's corrections and perturbations caused by Jupiter and Saturn, contained in his *Recherches sur les Mouvements de la Planète Herschel (dite Uranus)*, published in the *Connaissance des Temps* for 1849, and also PEIRCE's corrections and perturbations arising from the influence of Neptune.

The combined corrections of the elements deduced by PEIRCE for January 1, 1800, are as follows:—

APPENDIX.

corr. mean distance	= + 0.000942
corr. mean motion	= - 1".13560
corr. eccentricity	= - 0.0008626
corr. long. of per.	= + 8252".4
corr. long. of epoch	= + 2575".4

The Ephemeris of Neptune is derived from PEIRCE's theory and WALKER's orbit.
 The eclipses and elongations of Jupiter's Satellites are computed from DAMOISEAU's Tables.
 The semidiameters of the Planets are computed from the following values:—

	Semidiameter.	Log Dist.	Authority.
Mercury	8.34	0.00	LE VERRIER, <i>Theory of Mercury</i> .
Venus	8.546 ± 0.086	0.00	} PEIRCE, from the Washington Observations of 1845 and 1846, made with the mural circle.
Mars (polar)	2.842 ± 0.057	0.25	
Jupiter (polar)	18.78 ± 0.067	0.70	
Saturn (polar)	8.77 ± 0.039	0.95	
Uranus	1.68 ± 0.3	1.30	

To correspond to the apparent semidiameters observed with the Washington mural circle, all the semidiameters, except those of Mercury, computed from these values, must be increased by the constant quantity, 0".57.

The apparent elements of Saturn's Rings are computed from BESSEL's data, except those for Bond's dusky ring.

The elements of the eclipse are adapted to the modification of BESSEL's formulas, suggested by T. HENRY SAFFORD, Jr. The formulas are to be found in PEIRCE's Spherical Astronomy.

The elements adapted to BESSEL's formulas are given for all occultations of stars greater than those of the sixth magnitude.

The Heliocentric Coordinates of the Planets are given for the computation of perturbations, and the following are the values of the masses, that of the Sun being unity:—

Mercury	$\frac{1}{4865751}$	ENCKE, <i>A. N.</i> , No. 443.
Venus	$\frac{1}{390000}$	LE VERRIER, <i>Théor. de Merc.</i> , p. 115.
The Earth	$\frac{1}{354936}$	LE VERRIER, <i>Théor. de Merc.</i> , p. 26.
Mars	$\frac{1}{2680637}$	BURCKHARDT, <i>Conn. des Temps</i> , 1816, p. 343.
Jupiter	$\frac{1}{1047.879 \pm 0.235}$	BESSEL, <i>Die Masse des Jupiter</i> , p. 61.
Saturn	$\frac{1}{3501.6}$	BESSEL, <i>Comptes Rendus</i> , 1841.
Uranus	$\frac{1}{24965}$	LAMONT, <i>Mém. Ast. Soc.</i> , Vol. XI. p. 54.
Neptune	$\frac{1}{18780}$	PEIRCE, <i>Am. Ac. Proc.</i> , Vol. I. p. 333.

The intervals of original computation have in all cases been made sufficiently small to authorize the use of the differences as a check of the accuracy of the work. The results have also been tested, in various portions, by means of duplicate computations. The proofs from the electrotypes plates have been thoroughly examined by an independent series of differences. And it is believed that, in every respect, that system has been adopted in which accuracy was most likely to be secured.

CONSTRUCTION OF THE ALMANAC.

The principal computations of the Ephemeris have been distributed in the following manner:—

The Sun has been computed by Mr. EASTWOOD; the Ephemeris of the Moon, by Mr. OLIVER, Mr. FERREL and Mr. WRIGHT; and the Lunar Distances, by Mr. OLIVER, Mr. VAN VLECK, Mr. WRIGHT and Mr. FERREL. Mercury has been computed by Mr. AUSTIN, Venus by Miss MITCHELL, Mars by Mr. EASTWOOD, Jupiter by Professor KENDALL, Saturn by Professor VAN VLECK, Uranus by Mr. FERREL, and Neptune by Professor KENDALL. The Fixed Stars and the General Constants for Reduction have been computed by Mr. HILL, and the Occultations by Mr. DOWNES. The Eclipses have been computed and the Charts projected by Mr. WRIGHT.

MOON'S LIBRATION.

TABLE FOR THE LIBRATION OF THE MOON.									
$\Omega - \lambda$	$\Delta \lambda$	σ^{-1}	B	$\Omega - \lambda$	$\Omega - \lambda$	$\Delta \lambda$	σ^{-1}	B	$\Omega - \lambda$
0	0.0	39	0 0.0	180	0	0.6	56	1 3.9	134
1	0.0	39	0 1.6	179	46	0.6	57	1 4.9	133
2	0.0	39	0 3.1	178	48	0.6	58	1 6.0	132
3	0.1	39	0 4.7	177	49	0.6	59	1 7.0	131
4	0.1	39	0 6.2	176	50	0.6	60	1 8.0	130
5	0.1	39	0 7.7	175	51	0.6	62	1 9.0	129
6	0.2	39	0 9.3	174	52	0.6	63	1 10.0	128
7	0.2	39	0 10.8	173	53	0.5	64	1 10.9	127
8	0.2	39	0 12.4	172	54	0.5	66	1 11.8	126
9	0.2	39	0 13.9	171	55	0.5	67	1 12.7	125
10	0.2	39	0 15.4	170	56	0.5	69	1 13.6	124
11	0.3	39	0 16.9	169	57	0.5	71	1 14.5	123
12	0.3	40	0 18.5	168	58	0.5	73	1 15.3	122
13	0.3	40	0 20.0	167	59	0.5	75	1 16.1	121
14	0.3	40	0 21.5	166	60	0.5	77	1 16.9	120
15	0.3	40	0 23.0	165	61	0.5	80	1 17.6	119
16	0.3	40	0 24.5	164	62	0.5	83	1 18.4	118
17	0.3	40	0 26.0	163	63	0.5	86	1 19.1	117
18	0.3	41	0 27.4	162	64	0.5	89	1 19.8	116
19	0.4	41	0 28.9	161	65	0.4	92	1 20.4	115
20	0.4	41	0 30.4	160	66	0.4	95	1 21.1	114
21	0.4	41	0 31.8	159	67	0.4	99	1 21.7	113
22	0.4	42	0 33.2	158	68	0.4	103	1 22.3	112
23	0.4	42	0 34.7	157	69	0.4	108	1 22.9	111
24	0.4	42	0 36.1	156	70	0.4	113	1 23.4	110
25	0.4	43	0 37.5	155	71	0.4	119	1 23.9	109
26	0.5	43	0 38.9	154	72	0.4	125	1 24.4	108
27	0.5	43	0 40.3	153	73	0.4	132	1 24.9	107
28	0.5	44	0 41.7	152	74	0.3	141	1 25.3	106
29	0.5	44	0 43.1	151	75	0.3	150	1 25.7	105
30	0.5	45	0 44.4	150	76	0.3	160	1 26.1	104
31	0.5	45	0 45.7	149	77	0.3	172	1 26.5	103
32	0.5	46	0 47.0	148	78	0.2	186	1 26.8	102
33	0.5	46	0 48.4	147	79	0.2	202	1 27.1	101
34	0.5	47	0 49.7	146	80	0.2	222	1 27.4	100
35	0.5	47	0 51.0	145	81	0.2	247	1 27.7	99
36	0.5	48	0 52.2	144	82	0.2	278	1 27.9	98
37	0.5	48	0 53.4	143	83	0.1	318	1 28.1	97
38	0.6	49	0 54.7	142	84	0.1	370	1 28.3	96
39	0.6	50	0 55.9	141	85	0.1	440	1 28.5	95
40	0.6	50	0 57.1	140	86	0.1	555	1 28.6	94
41	0.6	51	0 58.3	139	87	0.1	740	1 28.7	93
42	0.6	52	0 59.4	138	88	0.0	1110	1 28.7	92
43	0.6	53	1 0.6	137	89	0.0	2220	1 28.8	91
44	0.6	54	1 1.7	136	90	0.0	∞	1 28.8	90
45	0.6	55	1 2.8	135					

$\Delta \lambda$ has the sign of $\tan. (\lambda - \Omega)$
 σ has the sign of $\cos. (\Omega - \lambda)$
 B has the sign of $\sin. (\Omega - \lambda)$

When $\Omega - \lambda$ exceeds 180° the table is to be entered with $(\Omega - \lambda) - 180^\circ$ as the argument in the column $\Omega - \lambda$.

TABLE I.

TABLE SHOWING THE CORRECTION REQUIRED, ON ACCOUNT OF SECOND DIFFERENCES OF THE MOON'S MOTION, IN FINDING THE GREENWICH TIME CORRESPONDING TO A CORRECTED LUNAR DISTANCE.

Approximate Interval.		Difference of the Proportional Logarithms in the Ephemeris.																									
		2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50	52
h m	h m	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s
0 0	3 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0 10	2 50	0	0	0	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3
0 20	2 40	0	1	1	1	1	2	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5	5	6	6	6	6
0 30	2 30	0	1	1	2	2	2	2	3	3	3	4	4	5	5	5	6	6	6	7	7	7	8	8	8	9	9
0 40	2 20	0	1	1	2	2	3	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10	10	10	11	11	11
0 50	2 10	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10	10	11	12	12	13	13	13
1 0	2 0	1	1	2	2	3	3	4	4	5	6	6	7	7	8	8	9	9	10	10	11	12	12	13	13	14	14
1 10	1 50	1	1	2	2	3	4	4	5	5	6	6	7	8	8	9	9	10	11	11	12	12	13	14	14	15	15
1 20	1 40	1	1	2	3	3	4	4	5	6	6	7	7	8	9	9	10	10	11	12	12	13	14	14	15	16	16
1 30	1 30	1	1	2	3	3	4	4	5	6	6	7	8	8	9	9	10	11	11	12	12	13	14	14	15	16	16

		Difference of the Proportional Logarithms in the Ephemeris.																									
		54	55	58	60	62	64	65	67	70	72	74	76	78	80	82	84	86	88	90	92	94	96	98	100	102	
h m	h m	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	
0 0	3 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0 10	2 50	4	4	4	4	4	4	4	5	5	5	5	5	5	5	6	6	6	6	6	6	6	7	7	7	7	
0 20	2 40	7	7	7	7	8	8	8	8	9	9	9	9	10	10	10	10	11	11	11	11	12	12	12	13	13	
0 30	2 30	9	10	10	10	11	11	12	12	12	13	13	13	14	14	14	15	15	16	16	16	17	17	17	18	18	
0 40	2 20	12	12	13	13	13	14	14	15	15	16	16	16	17	17	18	18	19	19	19	20	20	21	21	22	22	
0 50	2 10	14	14	15	15	16	16	16	17	17	18	19	19	20	20	21	21	22	22	22	23	23	24	24	25	26	
1 0	2 0	15	16	16	17	17	18	18	19	19	20	21	21	22	22	23	23	24	24	25	25	26	27	27	28	28	
1 10	1 50	16	17	17	18	18	19	19	20	21	21	22	22	23	24	24	25	25	26	27	27	28	28	29	30	30	
1 20	1 40	17	17	18	19	19	20	20	21	21	22	23	23	24	25	25	26	26	27	28	28	29	29	30	31	31	
1 30	1 30	17	18	18	19	19	20	21	21	22	23	23	24	24	25	25	26	27	27	28	29	29	30	31	31	32	

		Difference of the Proportional Logarithms in the Ephemeris.																
		104	105	108	110	112	114	116	118	120	122	124	126	128	130	132	134	136	138
h m	h m	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s
0 0	3 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0 10	2 50	7	7	7	7	7	7	8	8	8	8	8	8	8	8	8	9	9
0 20	2 40	13	13	13	14	14	14	14	15	15	15	15	15	15	16	16	16	17
0 30	2 30	18	18	19	19	19	20	20	20	21	21	21	22	22	22	23	23	24
0 40	2 20	22	23	23	24	24	25	25	26	26	27	27	27	28	28	29	29	30
0 50	2 10	26	26	27	27	28	29	29	30	30	31	31	31	32	32	33	33	34
1 0	2 0	29	29	30	30	31	31	32	33	33	34	34	35	35	36	37	37	38
1 10	1 50	31	31	32	32	33	34	34	35	35	36	37	37	38	39	39	40	40
1 20	1 40	32	33	33	34	34	35	35	36	37	38	38	39	39	40	41	41	42
1 30	1 30	32	33	34	34	35	35	36	36	37	38	39	39	40	40	41	42	42

The Correction is to be added to the approximate Greenwich Time when the Proportional Logarithms in the Ephemeris are decreasing, and subtracted when they are increasing.

TABLE II. SIDEREAL INTO MEAN SOLAR TIME.

Sidereal.	0 ^h .	1 ^h .	2 ^h .	3 ^h .	4 ^h .	5 ^h .	6 ^h .	7 ^h .	For Seconds.
m.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	s. s.
0	0 00.000	0 09.830	0 19.659	0 29.489	0 39.318	0 49.148	0 58.977	1 08.807	1 0.003
1	0 00.164	0 09.993	0 19.823	0 29.653	0 39.482	0 49.312	0 59.141	1 08.971	2 .005
2	0 00.328	0 10.157	0 19.987	0 29.816	0 39.646	0 49.475	0 59.305	1 09.135	3 .008
3	0 00.491	0 10.321	0 20.151	0 29.980	0 39.810	0 49.639	0 59.469	1 09.298	4 .011
4	0 00.655	0 10.485	0 20.314	0 30.144	0 39.974	0 49.803	0 59.633	1 09.462	5 .014
5	0 00.819	0 10.649	0 20.478	0 30.308	0 40.137	0 49.967	0 59.796	1 09.626	6 .016
6	0 00.983	0 10.813	0 20.642	0 30.472	0 40.301	0 50.131	0 59.960	1 09.790	7 .019
7	0 01.147	0 10.976	0 20.806	0 30.635	0 40.465	0 50.295	1 00.124	1 09.954	8 .022
8	0 01.311	0 11.140	0 20.970	0 30.799	0 40.629	0 50.458	1 00.288	1 10.118	9 .025
9	0 01.474	0 11.304	0 21.134	0 30.963	0 40.793	0 50.622	1 00.452	1 10.281	10 .027
10	0 01.638	0 11.468	0 21.297	0 31.127	0 40.956	0 50.786	1 00.616	1 10.445	11 .030
11	0 01.802	0 11.632	0 21.461	0 31.291	0 41.120	0 50.950	1 00.779	1 10.609	12 .033
12	0 01.966	0 11.795	0 21.625	0 31.455	0 41.284	0 51.114	1 00.943	1 10.773	13 .035
13	0 02.130	0 11.959	0 21.789	0 31.618	0 41.448	0 51.278	1 01.107	1 10.937	14 .038
14	0 02.294	0 12.123	0 21.953	0 31.782	0 41.612	0 51.441	1 01.271	1 11.100	15 .041
15	0 02.457	0 12.287	0 22.117	0 31.946	0 41.776	0 51.605	1 01.435	1 11.264	16 .044
16	0 02.621	0 12.451	0 22.280	0 32.110	0 41.939	0 51.769	1 01.599	1 11.428	17 .046
17	0 02.785	0 12.615	0 22.444	0 32.274	0 42.103	0 51.933	1 01.762	1 11.592	18 .049
18	0 02.949	0 12.778	0 22.608	0 32.438	0 42.267	0 52.097	1 01.926	1 11.756	19 .052
19	0 03.113	0 12.942	0 22.772	0 32.601	0 42.431	0 52.260	1 02.090	1 11.920	20 .055
20	0 03.277	0 13.106	0 22.936	0 32.765	0 42.595	0 52.424	1 02.254	1 12.083	21 .057
21	0 03.440	0 13.270	0 23.099	0 32.929	0 42.759	0 52.588	1 02.418	1 12.247	22 .060
22	0 03.604	0 13.434	0 23.263	0 33.093	0 42.922	0 52.752	1 02.582	1 12.411	23 .063
23	0 03.768	0 13.598	0 23.427	0 33.257	0 43.086	0 52.916	1 02.745	1 12.575	24 .066
24	0 03.932	0 13.761	0 23.591	0 33.420	0 43.250	0 53.080	1 02.909	1 12.739	25 .068
25	0 04.096	0 13.925	0 23.755	0 33.584	0 43.414	0 53.243	1 03.073	1 12.903	26 .071
26	0 04.259	0 14.089	0 23.919	0 33.748	0 43.578	0 53.407	1 03.237	1 13.066	27 .074
27	0 04.423	0 14.253	0 24.082	0 33.912	0 43.742	0 53.571	1 03.401	1 13.230	28 .076
28	0 04.587	0 14.417	0 24.246	0 34.076	0 43.905	0 53.735	1 03.564	1 13.394	29 .079
29	0 04.751	0 14.581	0 24.410	0 34.240	0 44.069	0 53.899	1 03.728	1 13.558	30 .082
30	0 04.915	0 14.744	0 24.574	0 34.403	0 44.233	0 54.063	1 03.892	1 13.722	31 .085
31	0 05.079	0 14.908	0 24.738	0 34.567	0 44.397	0 54.226	1 04.056	1 13.886	32 .087
32	0 05.242	0 15.072	0 24.902	0 34.731	0 44.561	0 54.390	1 04.220	1 14.049	33 .090
33	0 05.406	0 15.236	0 25.065	0 34.895	0 44.724	0 54.554	1 04.384	1 14.213	34 .093
34	0 05.570	0 15.400	0 25.229	0 35.059	0 44.888	0 54.718	1 04.547	1 14.377	35 .096
35	0 05.734	0 15.563	0 25.393	0 35.223	0 45.052	0 54.882	1 04.711	1 14.541	36 .098
36	0 05.898	0 15.727	0 25.557	0 35.386	0 45.216	0 55.046	1 04.875	1 14.705	37 .101
37	0 06.062	0 15.891	0 25.721	0 35.550	0 45.380	0 55.209	1 05.039	1 14.868	38 .104
38	0 06.225	0 16.055	0 25.885	0 35.714	0 45.544	0 55.373	1 05.203	1 15.032	39 .106
39	0 06.389	0 16.219	0 26.048	0 35.878	0 45.707	0 55.537	1 05.367	1 15.196	40 .109
40	0 06.553	0 16.383	0 26.212	0 36.042	0 45.871	0 55.701	1 05.530	1 15.360	41 .112
41	0 06.717	0 16.546	0 26.376	0 36.206	0 46.035	0 55.865	1 05.694	1 15.524	42 .115
42	0 06.881	0 16.710	0 26.540	0 36.369	0 46.199	0 56.028	1 05.858	1 15.688	43 .117
43	0 07.045	0 16.874	0 26.704	0 36.533	0 46.363	0 56.192	1 06.022	1 15.851	44 .120
44	0 07.208	0 17.038	0 26.867	0 36.697	0 46.527	0 56.356	1 06.186	1 16.015	45 .123
45	0 07.372	0 17.202	0 27.031	0 36.861	0 46.690	0 56.520	1 06.350	1 16.179	46 .126
46	0 07.536	0 17.366	0 27.195	0 37.025	0 46.854	0 56.684	1 06.513	1 16.343	47 .128
47	0 07.700	0 17.529	0 27.359	0 37.188	0 47.018	0 56.848	1 06.677	1 16.507	48 .131
48	0 07.864	0 17.693	0 27.523	0 37.352	0 47.182	0 57.011	1 06.841	1 16.671	49 .134
49	0 08.027	0 17.857	0 27.687	0 37.516	0 47.346	0 57.175	1 07.005	1 16.834	50 .137
50	0 08.191	0 18.021	0 27.850	0 37.680	0 47.510	0 57.339	1 07.169	1 16.998	51 .139
51	0 08.355	0 18.185	0 28.014	0 37.844	0 47.673	0 57.503	1 07.332	1 17.162	52 .142
52	0 08.519	0 18.349	0 28.178	0 38.008	0 47.837	0 57.667	1 07.496	1 17.326	53 .145
53	0 08.683	0 18.512	0 28.342	0 38.171	0 48.001	0 57.831	1 07.660	1 17.490	54 .147
54	0 08.847	0 18.676	0 28.506	0 38.335	0 48.165	0 57.994	1 07.824	1 17.654	55 .150
55	0 09.010	0 18.840	0 28.670	0 38.499	0 48.329	0 58.158	1 07.988	1 17.817	56 .153
56	0 09.174	0 19.004	0 28.833	0 38.663	0 48.492	0 58.322	1 08.152	1 17.981	57 .156
57	0 09.338	0 19.168	0 28.997	0 38.827	0 48.656	0 58.486	1 08.315	1 18.145	58 .158
58	0 09.502	0 19.331	0 29.161	0 38.991	0 48.820	0 58.650	1 08.479	1 18.309	59 .161
59	0 09.666	0 19.495	0 29.325	0 39.154	0 48.984	0 58.814	1 08.643	1 18.473	

TABLE II. SIDEREAL INTO MEAN SOLAR TIME.

Sidereal	8 h	9 h	10 h	11 h	12 h	13 h	14 h	15 h	For Seconds
m.	m.	m.	m.	m.	m.	m.	m.	m.	s.
0	18.636	18.466	18.296	18.125	17.955	17.784	17.614	17.443	0.008
1	18.800	18.630	18.459	18.289	18.119	17.948	17.778	17.607	.005
2	18.964	18.794	18.623	18.453	18.282	18.112	17.941	17.771	.008
3	19.128	18.958	18.787	18.617	18.446	18.276	18.105	17.935	.011
4	19.292	19.121	18.951	18.780	18.610	18.440	18.269	18.099	.014
5	19.456	19.285	19.115	18.944	18.774	18.603	18.433	18.263	.016
6	19.619	19.449	19.279	19.108	18.938	18.767	18.597	18.426	.019
7	19.783	19.613	19.442	19.272	19.101	18.931	18.761	18.590	.022
8	19.947	19.777	19.606	19.436	19.265	19.095	18.924	18.754	.025
9	20.111	19.940	19.770	19.600	19.439	19.259	19.088	18.918	.027
10	20.275	20.104	19.934	19.763	19.593	19.423	19.252	19.082	.030
11	20.439	20.268	20.098	19.927	19.757	19.586	19.416	19.245	.033
12	20.602	20.432	20.261	20.091	19.921	19.750	19.580	19.409	.035
13	20.766	20.596	20.425	20.255	20.084	19.914	19.744	19.573	.038
14	20.930	20.760	20.589	20.419	20.248	20.078	19.907	19.737	.041
15	21.094	20.923	20.753	20.583	20.412	20.242	20.071	19.901	.044
16	21.258	21.087	20.917	20.746	20.576	20.405	20.235	20.065	.046
17	21.422	21.251	21.081	20.910	20.740	20.569	20.399	20.228	.049
18	21.585	21.415	21.244	21.074	20.904	20.733	20.563	20.392	.052
19	21.749	21.579	21.408	21.238	21.067	20.897	20.727	20.556	.055
20	21.913	21.743	21.573	21.403	21.232	21.061	20.890	20.720	.057
21	22.077	21.906	21.736	21.565	21.395	21.225	21.054	20.884	.060
22	22.241	22.070	21.900	21.729	21.559	21.388	21.218	21.048	.063
23	22.404	22.234	22.064	21.893	21.723	21.552	21.382	21.211	.066
24	22.568	22.398	22.227	22.057	21.887	21.716	21.546	21.375	.068
25	22.732	22.562	22.391	22.221	22.050	21.880	21.709	21.539	.071
26	22.896	22.726	22.555	22.385	22.214	22.044	21.873	21.703	.074
27	23.060	22.890	22.719	22.548	22.378	22.208	22.037	21.867	.077
28	23.224	23.053	22.883	22.712	22.542	22.371	22.201	22.031	.079
29	23.387	23.217	23.047	22.876	22.706	22.535	22.365	22.194	.082
30	23.551	23.381	23.210	23.040	22.869	22.699	22.529	22.358	.085
31	23.715	23.545	23.374	23.204	23.033	22.863	22.692	22.522	.087
32	23.879	23.708	23.538	23.368	23.197	23.027	22.856	22.686	.090
33	24.043	23.872	23.702	23.531	23.361	23.191	23.020	22.850	.093
34	24.207	24.036	23.866	23.695	23.525	23.354	23.184	23.013	.096
35	24.370	24.200	24.029	23.859	23.689	23.518	23.348	23.177	.098
36	24.534	24.364	24.193	24.023	23.852	23.682	23.512	23.341	.101
37	24.698	24.528	24.357	24.187	24.016	23.846	23.675	23.505	.104
38	24.862	24.691	24.521	24.351	24.180	24.010	23.839	23.669	.106
39	25.026	24.855	24.685	24.514	24.344	24.173	24.003	23.833	.109
40	25.190	25.019	24.849	24.678	24.508	24.337	24.167	23.996	.112
41	25.353	25.183	25.012	24.842	24.672	24.501	24.331	24.160	.115
42	25.517	25.347	25.176	25.006	24.835	24.665	24.495	24.324	.117
43	25.681	25.511	25.340	25.170	24.999	24.829	24.658	24.488	.120
44	25.845	25.674	25.504	25.333	25.163	24.993	24.822	24.652	.123
45	26.009	25.838	25.668	25.497	25.327	25.156	24.986	24.816	.126
46	26.172	26.002	25.832	25.661	25.491	25.320	25.150	24.979	.128
47	26.336	26.166	25.995	25.825	25.655	25.484	25.314	25.143	.131
48	26.500	26.330	26.159	25.989	25.818	25.648	25.477	25.307	.134
49	26.664	26.493	26.323	26.153	25.982	25.812	25.641	25.471	.137
50	26.828	26.657	26.487	26.316	26.146	25.976	25.805	25.635	.139
51	26.992	26.821	26.651	26.480	26.310	26.139	25.969	25.798	.142
52	27.155	26.985	26.815	26.644	26.474	26.303	26.133	25.962	.145
53	27.319	27.149	26.978	26.808	26.637	26.467	26.297	26.126	.147
54	27.483	27.313	27.142	26.972	26.801	26.631	26.460	26.290	.150
55	27.647	27.477	27.306	27.136	26.965	26.795	26.624	26.454	.153
56	27.811	27.640	27.470	27.299	27.129	26.959	26.788	26.618	.156
57	27.975	27.804	27.634	27.463	27.293	27.122	26.952	26.781	.158
58	28.138	27.968	27.797	27.627	27.457	27.286	27.116	26.945	.161
59	28.302	28.132	27.961	27.791	27.620	27.450	27.280	27.109	

TABLE II. SIDEREAL INTO MEAN SOLAR TIME.

Sidereal.	16 ^h .	17 ^h .	18 ^h .	19 ^h .	20 ^h .	21 ^h .	22 ^h .	23 ^h .	For Seconds.
m.	m.	m.	m.	m.	m.	m.	m.	m.	s.
0	2 37.273	2 47.102	2 56.932	3 06.762	3 16.591	3 26.421	3 36.250	3 46.080	1 0.003
1	2 37.437	2 47.266	2 57.096	3 06.925	3 16.755	3 26.585	3 36.414	3 46.244	2 .005
2	2 37.601	2 47.430	2 57.260	3 07.089	3 16.919	3 26.748	3 36.578	3 46.407	3 .008
3	2 37.764	2 47.594	2 57.424	3 07.253	3 17.083	3 26.912	3 36.742	3 46.571	4 .011
4	2 37.928	2 47.758	2 57.587	3 07.417	3 17.246	3 27.076	3 36.906	3 46.735	5 .014
5	2 38.092	2 47.922	2 57.751	3 07.581	3 17.410	3 27.240	3 37.069	3 46.899	6 .016
6	2 38.256	2 48.085	2 57.915	3 07.745	3 17.574	3 27.404	3 37.233	3 47.063	7 .019
7	2 38.420	2 48.249	2 58.079	3 07.908	3 17.738	3 27.568	3 37.397	3 47.227	8 .022
8	2 38.584	2 48.413	2 58.243	3 08.072	3 17.902	3 27.731	3 37.561	3 47.390	9 .025
9	2 38.747	2 48.577	2 58.406	3 08.236	3 18.066	3 27.895	3 37.725	3 47.554	10 .027
10	2 38.911	2 48.741	2 58.570	3 08.400	3 18.229	3 28.059	3 37.889	3 47.718	11 .030
11	2 39.075	2 48.905	2 58.734	3 08.564	3 18.393	3 28.223	3 38.052	3 47.882	12 .033
12	2 39.239	2 49.068	2 58.898	3 08.728	3 18.557	3 28.387	3 38.216	3 48.046	13 .035
13	2 39.403	2 49.232	2 59.062	3 08.891	3 18.721	3 28.550	3 38.380	3 48.210	14 .038
14	2 39.566	2 49.396	2 59.226	3 09.055	3 18.885	3 28.714	3 38.544	3 48.373	15 .041
15	2 39.730	2 49.560	2 59.389	3 09.219	3 19.049	3 28.878	3 38.708	3 48.537	16 .044
16	2 39.894	2 49.724	2 59.553	3 09.383	3 19.212	3 29.042	3 38.871	3 48.701	17 .046
17	2 40.058	2 49.888	2 59.717	3 09.547	3 19.376	3 29.206	3 39.035	3 48.865	18 .049
18	2 40.222	2 50.051	2 59.881	3 09.710	3 19.540	3 29.370	3 39.199	3 49.029	19 .052
19	2 40.386	2 50.215	3 00.045	3 09.874	3 19.704	3 29.533	3 39.363	3 49.193	20 .055
20	2 40.549	2 50.379	3 00.209	3 10.038	3 19.868	3 29.697	3 39.527	3 49.356	21 .057
21	2 40.713	2 50.543	3 00.372	3 10.202	3 20.032	3 29.861	3 39.691	3 49.520	22 .060
22	2 40.877	2 50.707	3 00.536	3 10.366	3 20.195	3 30.025	3 39.854	3 49.684	23 .063
23	2 41.041	2 50.870	3 00.700	3 10.530	3 20.359	3 30.189	3 40.018	3 49.848	24 .066
24	2 41.205	2 51.034	3 00.864	3 10.693	3 20.523	3 30.353	3 40.182	3 50.012	25 .068
25	2 41.369	2 51.198	3 01.028	3 10.857	3 20.687	3 30.516	3 40.346	3 50.175	26 .071
26	2 41.532	2 51.362	3 01.192	3 11.021	3 20.851	3 30.680	3 40.510	3 50.339	27 .074
27	2 41.696	2 51.526	3 01.355	3 11.185	3 21.014	3 30.844	3 40.674	3 50.503	28 .076
28	2 41.860	2 51.690	3 01.519	3 11.349	3 21.178	3 31.008	3 40.837	3 50.667	29 .079
29	2 42.024	2 51.853	3 01.683	3 11.513	3 21.342	3 31.172	3 41.001	3 50.831	30 .082
30	2 42.188	2 52.017	3 01.847	3 11.676	3 21.506	3 31.336	3 41.165	3 50.995	31 .085
31	2 42.352	2 52.181	3 02.011	3 11.840	3 21.670	3 31.499	3 41.329	3 51.158	32 .087
32	2 42.515	2 52.345	3 02.174	3 12.004	3 21.834	3 31.663	3 41.493	3 51.322	33 .090
33	2 42.679	2 52.509	3 02.338	3 12.168	3 21.997	3 31.827	3 41.657	3 51.486	34 .093
34	2 42.843	2 52.673	3 02.502	3 12.332	3 22.161	3 31.991	3 41.820	3 51.650	35 .096
35	2 43.007	2 52.836	3 02.666	3 12.496	3 22.325	3 32.155	3 41.984	3 51.814	36 .098
36	2 43.171	2 53.000	3 02.830	3 12.659	3 22.489	3 32.318	3 42.148	3 51.978	37 .101
37	2 43.334	2 53.164	3 02.994	3 12.823	3 22.653	3 32.482	3 42.312	3 52.141	38 .104
38	2 43.498	2 53.328	3 03.157	3 12.987	3 22.817	3 32.646	3 42.476	3 52.305	39 .106
39	2 43.662	2 53.492	3 03.321	3 13.151	3 22.980	3 32.810	3 42.639	3 52.469	40 .109
40	2 43.826	2 53.656	3 03.485	3 13.315	3 23.144	3 32.974	3 42.803	3 52.633	41 .112
41	2 43.990	2 53.819	3 03.649	3 13.478	3 23.308	3 33.138	3 42.967	3 52.797	42 .115
42	2 44.154	2 53.983	3 03.813	3 13.642	3 23.472	3 33.301	3 43.131	3 52.961	43 .117
43	2 44.317	2 54.147	3 03.977	3 13.806	3 23.636	3 33.465	3 43.295	3 53.124	44 .120
44	2 44.481	2 54.311	3 04.140	3 13.970	3 23.800	3 33.629	3 43.459	3 53.288	45 .123
45	2 44.645	2 54.475	3 04.304	3 14.134	3 23.963	3 33.793	3 43.622	3 53.452	46 .126
46	2 44.809	2 54.638	3 04.468	3 14.298	3 24.127	3 33.957	3 43.786	3 53.616	47 .128
47	2 44.973	2 54.802	3 04.632	3 14.461	3 24.291	3 34.121	3 43.950	3 53.780	48 .131
48	2 45.137	2 54.966	3 04.796	3 14.625	3 24.455	3 34.284	3 44.114	3 53.943	49 .134
49	2 45.300	2 55.130	3 04.960	3 14.789	3 24.619	3 34.448	3 44.278	3 54.107	50 .137
50	2 45.464	2 55.294	3 05.123	3 14.953	3 24.782	3 34.612	3 44.442	3 54.271	51 .139
51	2 45.628	2 55.458	3 05.287	3 15.117	3 24.946	3 34.776	3 44.605	3 54.435	52 .142
52	2 45.792	2 55.621	3 05.451	3 15.281	3 25.110	3 34.940	3 44.769	3 54.599	53 .145
53	2 45.956	2 55.785	3 05.615	3 15.444	3 25.274	3 35.104	3 44.933	3 54.763	54 .147
54	2 46.120	2 55.949	3 05.779	3 15.608	3 25.438	3 35.267	3 45.097	3 54.926	55 .150
55	2 46.283	2 56.113	3 05.942	3 15.772	3 25.602	3 35.431	3 45.261	3 55.090	56 .153
56	2 46.447	2 56.277	3 06.106	3 15.936	3 25.765	3 35.595	3 45.425	3 55.254	57 .156
57	2 46.611	2 56.441	3 06.270	3 16.100	3 25.929	3 35.759	3 45.588	3 55.418	58 .158
58	2 46.775	2 56.604	3 06.434	3 16.264	3 26.093	3 35.923	3 45.752	3 55.582	59 .161
59	2 46.939	2 56.768	3 06.598	3 16.427	3 26.257	3 36.086	3 45.916	3 55.746	

TABLE II. MEAN SOLAR INTO SIDEREAL TIME.

Mean Solar.	0 ^h	1 ^h	2 ^h	3 ^h	4 ^h	5 ^h	6 ^h	7 ^h	For Seconds.
0	0 00.000	0 09.856	0 19.713	0 29.569	0 39.426	0 49.282	0 59.139	1 08.995	
1	0 00.164	0 10.021	0 19.877	0 29.734	0 39.590	0 49.447	0 59.303	1 09.160	1 0.003
2	0 00.329	0 10.185	0 20.041	0 29.898	0 39.754	0 49.611	0 59.467	1 09.324	2 .005
3	0 00.493	0 10.349	0 20.206	0 30.062	0 39.919	0 49.775	0 59.632	1 09.488	3 .008
4	0 00.657	0 10.514	0 20.370	0 30.227	0 40.083	0 49.939	0 59.796	1 09.652	4 .011
5	0 00.821	0 10.678	0 20.534	0 30.391	0 40.247	0 50.104	0 59.960	1 09.817	5 .014
6	0 00.986	0 10.842	0 20.699	0 30.555	0 40.412	0 50.268	1 00.124	1 09.981	6 .016
7	0 01.150	0 11.006	0 20.863	0 30.719	0 40.576	0 50.432	1 00.289	1 10.145	7 .019
8	0 01.314	0 11.171	0 21.027	0 30.884	0 40.740	0 50.597	1 00.453	1 10.310	8 .022
9	0 01.478	0 11.335	0 21.191	0 31.048	0 40.904	0 50.761	1 00.617	1 10.474	9 .025
10	0 01.643	0 11.499	0 21.356	0 31.212	0 41.069	0 50.925	1 00.782	1 10.638	10 .027
11	0 01.807	0 11.663	0 21.520	0 31.376	0 41.233	0 51.089	1 00.946	1 10.802	11 .030
12	0 01.971	0 11.828	0 21.684	0 31.541	0 41.397	0 51.254	1 01.110	1 10.967	12 .033
13	0 02.136	0 11.992	0 21.849	0 31.705	0 41.561	0 51.418	1 01.274	1 11.131	13 .036
14	0 02.300	0 12.156	0 22.013	0 31.869	0 41.726	0 51.582	1 01.439	1 11.295	14 .038
15	0 02.464	0 12.321	0 22.177	0 32.034	0 41.890	0 51.746	1 01.603	1 11.459	15 .041
16	0 02.628	0 12.485	0 22.341	0 32.198	0 42.054	0 51.911	1 01.767	1 11.624	16 .044
17	0 02.793	0 12.649	0 22.506	0 32.362	0 42.219	0 52.075	1 01.932	1 11.788	17 .047
18	0 02.957	0 12.813	0 22.670	0 32.526	0 42.383	0 52.239	1 02.096	1 11.952	18 .049
19	0 03.121	0 12.978	0 22.834	0 32.691	0 42.547	0 52.404	1 02.260	1 12.117	19 .052
20	0 03.285	0 13.142	0 22.998	0 32.855	0 42.711	0 52.568	1 02.424	1 12.281	20 .055
21	0 03.450	0 13.306	0 23.163	0 33.019	0 42.876	0 52.732	1 02.589	1 12.445	21 .057
22	0 03.614	0 13.471	0 23.327	0 33.183	0 43.040	0 52.896	1 02.753	1 12.609	22 .060
23	0 03.778	0 13.635	0 23.491	0 33.348	0 43.204	0 53.061	1 02.917	1 12.774	23 .063
24	0 03.943	0 13.799	0 23.656	0 33.512	0 43.368	0 53.225	1 03.081	1 12.938	24 .066
25	0 04.107	0 13.963	0 23.820	0 33.676	0 43.533	0 53.389	1 03.246	1 13.102	25 .068
26	0 04.271	0 14.128	0 23.984	0 33.841	0 43.697	0 53.554	1 03.410	1 13.266	26 .071
27	0 04.435	0 14.292	0 24.148	0 34.005	0 43.861	0 53.718	1 03.574	1 13.431	27 .074
28	0 04.600	0 14.456	0 24.313	0 34.169	0 44.026	0 53.882	1 03.739	1 13.595	28 .077
29	0 04.764	0 14.620	0 24.477	0 34.333	0 44.190	0 54.046	1 03.903	1 13.759	29 .079
30	0 04.928	0 14.785	0 24.641	0 34.498	0 44.354	0 54.211	1 04.067	1 13.924	30 .082
31	0 05.093	0 14.949	0 24.805	0 34.662	0 44.518	0 54.375	1 04.231	1 14.088	31 .085
32	0 05.257	0 15.113	0 24.970	0 34.826	0 44.683	0 54.539	1 04.396	1 14.252	32 .088
33	0 05.421	0 15.278	0 25.134	0 34.990	0 44.847	0 54.703	1 04.560	1 14.416	33 .090
34	0 05.585	0 15.442	0 25.298	0 35.155	0 45.011	0 54.868	1 04.724	1 14.581	34 .093
35	0 05.750	0 15.606	0 25.463	0 35.319	0 45.176	0 55.032	1 04.888	1 14.745	35 .096
36	0 05.914	0 15.770	0 25.627	0 35.483	0 45.340	0 55.196	1 05.053	1 14.909	36 .099
37	0 06.078	0 15.935	0 25.791	0 35.648	0 45.504	0 55.361	1 05.217	1 15.073	37 .101
38	0 06.242	0 16.099	0 25.955	0 35.812	0 45.668	0 55.525	1 05.381	1 15.238	38 .104
39	0 06.407	0 16.263	0 26.120	0 35.976	0 45.833	0 55.689	1 05.546	1 15.402	39 .107
40	0 06.571	0 16.427	0 26.284	0 36.140	0 45.997	0 55.853	1 05.710	1 15.566	40 .110
41	0 06.735	0 16.592	0 26.448	0 36.305	0 46.161	0 56.018	1 05.874	1 15.731	41 .112
42	0 06.900	0 16.756	0 26.612	0 36.469	0 46.325	0 56.182	1 06.038	1 15.895	42 .115
43	0 07.064	0 16.920	0 26.777	0 36.633	0 46.490	0 56.346	1 06.203	1 16.059	43 .118
44	0 07.228	0 17.085	0 26.941	0 36.798	0 46.654	0 56.510	1 06.367	1 16.223	44 .120
45	0 07.392	0 17.249	0 27.105	0 36.962	0 46.818	0 56.675	1 06.531	1 16.388	45 .123
46	0 07.557	0 17.413	0 27.270	0 37.126	0 46.983	0 56.839	1 06.695	1 16.552	46 .126
47	0 07.721	0 17.577	0 27.434	0 37.290	0 47.147	0 57.003	1 06.860	1 16.716	47 .129
48	0 07.885	0 17.742	0 27.598	0 37.455	0 47.311	0 57.168	1 07.024	1 16.881	48 .131
49	0 08.049	0 17.906	0 27.762	0 37.619	0 47.475	0 57.332	1 07.188	1 17.045	49 .134
50	0 08.214	0 18.070	0 27.927	0 37.783	0 47.640	0 57.496	1 07.353	1 17.209	50 .137
51	0 08.378	0 18.234	0 28.091	0 37.947	0 47.804	0 57.660	1 07.517	1 17.373	51 .140
52	0 08.542	0 18.399	0 28.255	0 38.112	0 47.968	0 57.825	1 07.681	1 17.538	52 .142
53	0 08.707	0 18.563	0 28.420	0 38.276	0 48.132	0 57.989	1 07.845	1 17.702	53 .145
54	0 08.871	0 18.727	0 28.584	0 38.440	0 48.297	0 58.153	1 08.010	1 17.866	54 .148
55	0 09.035	0 18.892	0 28.748	0 38.605	0 48.461	0 58.317	1 08.174	1 18.030	55 .151
56	0 09.199	0 19.056	0 28.912	0 38.769	0 48.625	0 58.482	1 08.338	1 18.195	56 .153
57	0 09.364	0 19.220	0 29.077	0 38.933	0 48.790	0 58.646	1 08.502	1 18.359	57 .156
58	0 09.528	0 19.384	0 29.241	0 39.097	0 48.954	0 58.810	1 08.667	1 18.523	58 .159
59	0 09.692	0 19.549	0 29.405	0 39.262	0 49.118	0 58.975	1 08.831	1 18.688	59 .162

TABLE II. MEAN SOLAR INTO SIDEREAL TIME.

Mean Solar.	8 ^h .	9 ^h .	10 ^h .	11 ^h .	12 ^h .	13 ^h .	14 ^h .	15 ^h .	For Seconds.
m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	a. s.
0	1 18.852	1 28.708	1 38.565	1 48.421	1 58.278	2 08.134	2 17.991	2 27.847	1 0.003
1	1 19.016	1 28.873	1 38.729	1 48.585	1 58.442	2 08.298	2 18.155	2 28.011	2 .005
2	1 19.180	1 29.037	1 38.893	1 48.750	1 58.606	2 08.463	2 18.319	2 28.176	3 .008
3	1 19.345	1 29.201	1 39.058	1 48.914	1 58.771	2 08.627	2 18.483	2 28.340	4 .011
4	1 19.509	1 29.365	1 39.222	1 49.078	1 58.935	2 08.791	2 18.648	2 28.504	5 .014
5	1 19.673	1 29.530	1 39.386	1 49.243	1 59.099	2 08.956	2 18.812	2 28.668	6 .016
6	1 19.837	1 29.694	1 39.550	1 49.407	1 59.263	2 09.120	2 18.976	2 28.833	7 .019
7	1 20.002	1 29.858	1 39.715	1 49.571	1 59.428	2 09.284	2 19.141	2 28.997	8 .022
8	1 20.166	1 30.022	1 39.879	1 49.735	1 59.592	2 09.448	2 19.305	2 29.161	9 .025
9	1 20.330	1 30.187	1 40.043	1 49.900	1 59.756	2 09.613	2 19.469	2 29.326	10 .027
10	1 20.495	1 30.351	1 40.207	1 50.064	1 59.920	2 09.777	2 19.633	2 29.490	11 .030
11	1 20.659	1 30.515	1 40.372	1 50.228	2 00.085	2 09.941	2 19.798	2 29.654	12 .033
12	1 20.823	1 30.680	1 40.536	1 50.393	2 00.249	2 10.105	2 19.962	2 29.818	13 .036
13	1 20.987	1 30.844	1 40.700	1 50.557	2 00.413	2 10.270	2 20.126	2 29.983	14 .038
14	1 21.152	1 31.008	1 40.865	1 50.721	2 00.578	2 10.434	2 20.290	2 30.147	15 .041
15	1 21.316	1 31.172	1 41.029	1 50.885	2 00.742	2 10.598	2 20.455	2 30.311	16 .044
16	1 21.480	1 31.337	1 41.193	1 51.050	2 00.906	2 10.763	2 20.619	2 30.476	17 .047
17	1 21.644	1 31.501	1 41.357	1 51.214	2 01.070	2 10.927	2 20.783	2 30.640	18 .049
18	1 21.809	1 31.665	1 41.522	1 51.378	2 01.235	2 11.091	2 20.948	2 30.804	19 .052
19	1 21.973	1 31.829	1 41.686	1 51.542	2 01.399	2 11.255	2 21.112	2 30.968	20 .055
20	1 22.137	1 31.994	1 41.850	1 51.707	2 01.563	2 11.420	2 21.276	2 31.133	21 .057
21	1 22.302	1 32.158	1 42.015	1 51.871	2 01.727	2 11.584	2 21.440	2 31.297	22 .060
22	1 22.466	1 32.322	1 42.179	1 52.035	2 01.892	2 11.748	2 21.605	2 31.461	23 .063
23	1 22.630	1 32.487	1 42.343	1 52.200	2 02.056	2 11.912	2 21.769	2 31.625	24 .066
24	1 22.794	1 32.651	1 42.507	1 52.364	2 02.220	2 12.077	2 21.933	2 31.790	25 .068
25	1 22.959	1 32.815	1 42.672	1 52.528	2 02.385	2 12.241	2 22.098	2 31.954	26 .071
26	1 23.123	1 32.979	1 42.836	1 52.692	2 02.549	2 12.405	2 22.262	2 32.118	27 .074
27	1 23.287	1 33.144	1 43.000	1 52.857	2 02.713	2 12.570	2 22.426	2 32.283	28 .077
28	1 23.451	1 33.308	1 43.164	1 53.021	2 02.877	2 12.734	2 22.590	2 32.447	29 .079
29	1 23.616	1 33.472	1 43.329	1 53.185	2 03.042	2 12.898	2 22.755	2 32.611	30 .082
30	1 23.780	1 33.637	1 43.493	1 53.349	2 03.206	2 13.062	2 22.919	2 32.775	31 .085
31	1 23.944	1 33.801	1 43.657	1 53.514	2 03.370	2 13.227	2 23.083	2 32.940	32 .088
32	1 24.109	1 33.965	1 43.822	1 53.678	2 03.534	2 13.391	2 23.247	2 33.104	33 .090
33	1 24.273	1 34.129	1 43.986	1 53.842	2 03.699	2 13.555	2 23.412	2 33.268	34 .093
34	1 24.437	1 34.294	1 44.150	1 54.007	2 03.863	2 13.720	2 23.576	2 33.432	35 .096
35	1 24.601	1 34.458	1 44.314	1 54.171	2 04.027	2 13.884	2 23.740	2 33.597	36 .099
36	1 24.766	1 34.622	1 44.479	1 54.335	2 04.192	2 14.048	2 23.905	2 33.761	37 .101
37	1 24.930	1 34.786	1 44.643	1 54.499	2 04.356	2 14.212	2 24.069	2 33.925	38 .104
38	1 25.094	1 34.951	1 44.807	1 54.664	2 04.520	2 14.377	2 24.233	2 34.090	39 .107
39	1 25.259	1 35.115	1 44.971	1 54.828	2 04.684	2 14.541	2 24.397	2 34.254	40 .110
40	1 25.423	1 35.279	1 45.136	1 54.992	2 04.849	2 14.705	2 24.562	2 34.418	41 .112
41	1 25.587	1 35.444	1 45.300	1 55.156	2 05.013	2 14.869	2 24.726	2 34.582	42 .115
42	1 25.751	1 35.608	1 45.464	1 55.321	2 05.177	2 15.034	2 24.890	2 34.747	43 .118
43	1 25.916	1 35.772	1 45.629	1 55.485	2 05.342	2 15.198	2 25.054	2 34.911	44 .120
44	1 26.080	1 35.936	1 45.793	1 55.649	2 05.506	2 15.362	2 25.219	2 35.075	45 .123
45	1 26.244	1 36.101	1 45.957	1 55.814	2 05.670	2 15.527	2 25.383	2 35.239	46 .126
46	1 26.408	1 36.265	1 46.121	1 55.978	2 05.834	2 15.691	2 25.547	2 35.404	47 .129
47	1 26.573	1 36.429	1 46.286	1 56.142	2 05.999	2 15.855	2 25.712	2 35.568	48 .131
48	1 26.737	1 36.593	1 46.450	1 56.306	2 06.163	2 16.019	2 25.876	2 35.732	49 .134
49	1 26.901	1 36.758	1 46.614	1 56.471	2 06.327	2 16.184	2 26.040	2 35.897	50 .137
50	1 27.066	1 36.922	1 46.778	1 56.635	2 06.491	2 16.348	2 26.204	2 36.061	51 .140
51	1 27.230	1 37.086	1 46.943	1 56.799	2 06.656	2 16.512	2 26.369	2 36.225	52 .142
52	1 27.394	1 37.251	1 47.107	1 56.964	2 06.820	2 16.676	2 26.533	2 36.389	53 .145
53	1 27.558	1 37.415	1 47.271	1 57.128	2 06.984	2 16.841	2 26.697	2 36.554	54 .148
54	1 27.723	1 37.579	1 47.436	1 57.292	2 07.149	2 17.005	2 26.861	2 36.718	55 .151
55	1 27.887	1 37.743	1 47.600	1 57.456	2 07.313	2 17.169	2 27.026	2 36.882	56 .153
56	1 28.051	1 37.908	1 47.764	1 57.621	2 07.477	2 17.334	2 27.190	2 37.047	57 .156
57	1 28.215	1 38.072	1 47.928	1 57.785	2 07.641	2 17.498	2 27.354	2 37.211	58 .159
58	1 28.380	1 38.236	1 48.093	1 57.949	2 07.806	2 17.662	2 27.519	2 37.375	59 .162
59	1 28.544	1 38.400	1 48.257	1 58.113	2 07.970	2 17.826	2 27.683	2 37.539	

TABLE II. MEAN SOLAR INTO SIDEREAL TIME.

Mean Solar.	16 ^h .	17 ^h .	18 ^h .	19 ^h .	20 ^h .	21 ^h .	22 ^h .	23 ^h .	For Seconds.
m.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	s.
0	2 37.704	2 47.560	2 57.417	3 07.273	3 17.129	3 26.986	3 36.842	3 46.699	1 0.003
1	2 37.868	2 47.724	2 57.581	3 07.437	3 17.294	3 27.150	3 37.007	3 46.863	2 .006
2	2 38.032	2 47.889	2 57.745	3 07.602	3 17.458	3 27.315	3 37.171	3 47.027	3 .008
3	2 38.196	2 48.053	2 57.909	3 07.766	3 17.622	3 27.479	3 37.335	3 47.192	4 .011
4	2 38.361	2 48.217	2 58.074	3 07.930	3 17.787	3 27.643	3 37.500	3 47.356	5 .014
5	2 38.525	2 48.381	2 58.238	3 08.094	3 17.951	3 27.807	3 37.664	3 47.520	6 .016
6	2 38.689	2 48.546	2 58.402	3 08.259	3 18.115	3 27.972	3 37.828	3 47.685	7 .019
7	2 38.854	2 48.710	2 58.566	3 08.423	3 18.279	3 28.136	3 37.992	3 47.849	8 .022
8	2 39.018	2 48.874	2 58.731	3 08.587	3 18.444	3 28.300	3 38.157	3 48.013	9 .025
9	2 39.182	2 49.039	2 58.895	3 08.751	3 18.608	3 28.464	3 38.321	3 48.177	10 .027
10	2 39.346	2 49.203	2 59.059	3 08.916	3 18.772	3 28.629	3 38.485	3 48.342	11 .030
11	2 39.511	2 49.367	2 59.224	3 09.080	3 18.937	3 28.793	3 38.649	3 48.506	12 .033
12	2 39.675	2 49.531	2 59.388	3 09.244	3 19.101	3 28.957	3 38.814	3 48.670	13 .036
13	2 39.839	2 49.696	2 59.552	3 09.409	3 19.265	3 29.122	3 38.978	3 48.834	14 .038
14	2 40.003	2 49.860	2 59.716	3 09.573	3 19.429	3 29.286	3 39.142	3 48.999	15 .041
15	2 40.168	2 50.024	2 59.881	3 09.737	3 19.594	3 29.450	3 39.307	3 49.163	16 .044
16	2 40.332	2 50.188	3 00.045	3 09.901	3 19.758	3 29.614	3 39.471	3 49.327	17 .047
17	2 40.496	2 50.353	3 00.209	3 10.066	3 19.922	3 29.779	3 39.635	3 49.492	18 .049
18	2 40.661	2 50.517	3 00.373	3 10.230	3 20.086	3 29.943	3 39.799	3 49.656	19 .052
19	2 40.825	2 50.681	3 00.538	3 10.394	3 20.251	3 30.107	3 39.964	3 49.820	20 .055
20	2 40.989	2 50.846	3 00.702	3 10.559	3 20.415	3 30.271	3 40.128	3 49.984	21 .057
21	2 41.153	2 51.010	3 00.866	3 10.723	3 20.579	3 30.436	3 40.292	3 50.149	22 .060
22	2 41.318	2 51.174	3 01.031	3 10.887	3 20.744	3 30.600	3 40.456	3 50.313	23 .063
23	2 41.482	2 51.338	3 01.195	3 11.051	3 20.908	3 30.764	3 40.621	3 50.477	24 .066
24	2 41.646	2 51.503	3 01.359	3 11.216	3 21.072	3 30.929	3 40.785	3 50.642	25 .068
25	2 41.810	2 51.667	3 01.523	3 11.380	3 21.236	3 31.093	3 40.949	3 50.806	26 .071
26	2 41.975	2 51.831	3 01.688	3 11.544	3 21.401	3 31.257	3 41.114	3 50.970	27 .074
27	2 42.139	2 51.995	3 01.852	3 11.708	3 21.565	3 31.421	3 41.278	3 51.134	28 .077
28	2 42.303	2 52.160	3 02.016	3 11.873	3 21.729	3 31.586	3 41.442	3 51.299	29 .079
29	2 42.468	2 52.324	3 02.181	3 12.037	3 21.893	3 31.750	3 41.606	3 51.463	30 .082
30	2 42.632	2 52.488	3 02.345	3 12.201	3 22.058	3 31.914	3 41.771	3 51.627	31 .085
31	2 42.796	2 52.653	3 02.509	3 12.366	3 22.222	3 32.078	3 41.935	3 51.791	32 .088
32	2 42.960	2 52.817	3 02.673	3 12.530	3 22.386	3 32.243	3 42.099	3 51.956	33 .090
33	2 43.125	2 52.981	3 02.838	3 12.694	3 22.551	3 32.407	3 42.264	3 52.120	34 .093
34	2 43.289	2 53.145	3 03.002	3 12.858	3 22.715	3 32.571	3 42.428	3 52.284	35 .096
35	2 43.453	2 53.310	3 03.166	3 13.023	3 22.879	3 32.736	3 42.592	3 52.449	36 .099
36	2 43.617	2 53.474	3 03.330	3 13.187	3 23.043	3 32.900	3 42.756	3 52.613	37 .101
37	2 43.782	2 53.638	3 03.495	3 13.351	3 23.208	3 33.064	3 42.921	3 52.777	38 .104
38	2 43.946	2 53.803	3 03.659	3 13.515	3 23.372	3 33.228	3 43.085	3 52.941	39 .107
39	2 44.110	2 53.967	3 03.823	3 13.680	3 23.536	3 33.393	3 43.249	3 53.106	40 .110
40	2 44.275	2 54.131	3 03.988	3 13.844	3 23.700	3 33.557	3 43.413	3 53.270	41 .112
41	2 44.439	2 54.295	3 04.152	3 14.008	3 23.865	3 33.721	3 43.578	3 53.434	42 .115
42	2 44.603	2 54.460	3 04.316	3 14.173	3 24.029	3 33.886	3 43.742	3 53.598	43 .118
43	2 44.767	2 54.624	3 04.480	3 14.337	3 24.193	3 34.050	3 43.906	3 53.763	44 .120
44	2 44.932	2 54.788	3 04.645	3 14.501	3 24.358	3 34.214	3 44.071	3 53.927	45 .123
45	2 45.096	2 54.952	3 04.809	3 14.665	3 24.522	3 34.378	3 44.235	3 54.091	46 .126
46	2 45.260	2 55.117	3 04.973	3 14.830	3 24.686	3 34.543	3 44.399	3 54.256	47 .129
47	2 45.425	2 55.281	3 05.137	3 14.994	3 24.850	3 34.707	3 44.563	3 54.420	48 .131
48	2 45.589	2 55.445	3 05.302	3 15.158	3 25.015	3 34.871	3 44.728	3 54.584	49 .134
49	2 45.753	2 55.610	3 05.466	3 15.322	3 25.179	3 35.035	3 44.892	3 54.748	50 .137
50	2 45.917	2 55.774	3 05.630	3 15.487	3 25.343	3 35.200	3 45.056	3 54.913	51 .140
51	2 46.082	2 55.938	3 05.795	3 15.651	3 25.508	3 35.364	3 45.220	3 55.077	52 .142
52	2 46.246	2 56.102	3 05.959	3 15.815	3 25.672	3 35.528	3 45.385	3 55.241	53 .145
53	2 46.410	2 56.267	3 06.123	3 15.980	3 25.836	3 35.693	3 45.549	3 55.405	54 .148
54	2 46.574	2 56.431	3 06.287	3 16.144	3 26.000	3 35.857	3 45.713	3 55.570	55 .151
55	2 46.739	2 56.595	3 06.452	3 16.308	3 26.165	3 36.021	3 45.878	3 55.734	56 .153
56	2 46.903	2 56.759	3 06.616	3 16.472	3 26.329	3 36.185	3 46.042	3 55.898	57 .156
57	2 47.067	2 56.924	3 06.780	3 16.637	3 26.493	3 36.350	3 46.206	3 56.063	58 .159
58	2 47.232	2 57.088	3 06.944	3 16.801	3 26.657	3 36.514	3 46.370	3 56.227	59 .162
59	2 47.396	2 57.252	3 07.109	3 16.965	3 26.822	3 36.678	3 46.535	3 56.391	

TABLE III.

TABLE GIVING, FOR SEVEN POLAR STARS, THE CORRECTIONS OF THE APPARENT PLACE WHICH DEPEND ON THE ARGUMENT 2ϵ IN NUTATION.

ϵ or $\epsilon - 180^\circ$	α Urs. Min.		51 Cephei.		32 Camelop.		ϵ Urs. Min.		δ Urs. Min.		λ Urs. Min.		σ Octantis.		ϵ or $\epsilon - 180^\circ$
	R. A.	Dec.	R. A.	Dec.	R. A.	Dec.	R. A.	Dec.	R. A.	Dec.	R. A.	Dec.	R. A.	Dec.	
0°	-.233	+.03	+.021	+.09	+.056	-.02	+.011	-.09	-.006	-.09	-.150	-.08	+.013	-.09	90°
2	.233	.02	.012	.09	.056	.01	.013	.08	-.001	.09	.133	.08	-.018	.09	92
4	.242	.02	+.003	.09	.055	-.01	.015	.08	+.005	.09	.115	.08	.049	.09	94
6	.245	+.01	-.005	.09	.055	.00	.016	.08	.010	.09	.097	.08	.080	.09	96
8	.246	.00	.014	.09	.054	.00	.018	.08	.016	.09	.078	.09	.110	.09	98
10	-.246	.00	-.023	+.09	+.052	+.01	+.019	-.07	+.021	-.08	-.059	-.09	-.139	-.08	100
12	.246	-.01	.031	.09	.051	.01	.021	.07	.026	.08	.040	.09	.168	.08	102
14	.244	.01	.039	.08	.049	.02	.022	.07	.031	.08	-.020	.09	.196	.08	104
16	.241	.02	.048	.08	.047	.03	.023	.06	.036	.08	.000	.09	.224	.08	106
18	.237	.02	.056	.08	.045	.03	.024	.06	.041	.07	+.019	.09	.250	.07	108
20	-.230	-.03	-.063	+.08	+.042	+.04	+.025	-.05	+.046	-.07	+.039	-.08	-.275	-.07	110
22	.224	.03	.071	.07	.039	.04	.026	.05	.050	.07	.058	.08	.298	.07	112
24	.216	.04	.078	.07	.036	.05	.027	.04	.054	.06	.078	.08	.320	.06	114
26	.207	.04	.084	.07	.033	.05	.027	.04	.058	.06	.097	.08	.341	.06	116
28	.197	.05	.091	.06	.030	.06	.028	.03	.062	.05	.115	.08	.360	.05	118
30	-.187	-.05	-.096	+.06	+.027	+.06	+.028	-.02	+.065	-.05	+.133	-.07	-.377	-.05	120
32	.175	.06	.102	.05	.023	.06	.028	.02	.068	.04	.150	.07	.392	.04	122
34	.162	.06	.107	.05	.020	.07	.028	.01	.071	.04	.166	.07	.406	.03	124
36	.149	.07	.111	.04	.016	.07	.028	-.01	.073	.03	.182	.06	.417	.03	126
38	.135	.07	.115	.03	.012	.07	.028	.00	.075	.03	.196	.06	.426	.02	128
40	-.120	-.07	-.118	+.03	+.008	+.07	+.028	+.01	+.077	-.02	+.210	-.05	-.434	-.02	130
42	.105	.07	.123	.02	+.004	.08	.027	.01	.078	.01	.223	.05	.439	.01	132
44	.089	.08	.122	.02	.000	.08	.026	.02	.079	-.01	.235	.04	.442	-.01	134
46	.073	.08	.124	+.01	-.004	.08	.026	.02	.079	.00	.245	.04	.443	.00	136
48	.056	.08	.125	.00	.007	.08	.025	.03	.079	.00	.254	.03	.442	+.01	138
50	-.039	-.08	-.125	.00	-.011	+.08	+.024	+.04	+.079	+.01	+.262	-.02	-.438	+.01	140
52	.022	.08	.125	-.01	.015	.08	.023	.04	.078	.02	.269	.02	.433	.02	142
54	-.005	.08	.124	.01	.019	.08	.021	.05	.077	.02	.275	.01	.425	.02	144
56	+.012	.08	.122	.02	.022	.08	.020	.05	.075	.03	.279	-.01	.415	.03	146
58	.029	.08	.120	.03	.026	.08	.018	.06	.073	.03	.282	.00	.404	.04	148
60	+.046	-.08	-.117	-.03	-.029	+.08	+.017	+.06	+.071	+.04	+.283	+.01	-.390	+.04	150
62	.063	.08	.114	.04	.033	.08	.015	.07	.069	.04	.283	.01	.374	.05	152
64	.079	.08	.110	.04	.036	.07	.014	.07	.066	.05	.281	.02	.357	.05	154
66	.095	.08	.106	.05	.039	.07	.012	.07	.063	.05	.279	.02	.338	.06	156
68	.111	.07	.101	.05	.041	.07	.010	.08	.059	.06	.275	.03	.317	.06	158
70	+.126	-.07	-.095	-.06	-.044	+.06	+.008	+.08	+.055	+.06	+.269	+.03	-.294	+.07	160
72	.141	.07	.089	.06	.046	.06	.006	.08	.051	.07	.263	.04	.271	.07	162
74	.154	.06	.083	.07	.048	.06	.004	.08	.047	.07	.255	.04	.245	.07	164
76	.167	.06	.076	.07	.050	.05	+.002	.08	.043	.08	.245	.05	.219	.08	166
78	.180	.06	.069	.07	.052	.05	.000	.09	.038	.08	.235	.05	.192	.08	168
80	+.191	-.05	-.062	-.08	-.053	+.04	-.002	+.09	+.033	+.08	+.223	+.06	-.163	+.08	170
82	.201	.05	.054	.08	.054	.04	.004	.09	.028	.08	.210	.06	.134	.08	172
84	.211	.04	.046	.08	.055	.03	.006	.09	.023	.09	.197	.07	.105	.09	174
86	.219	.04	.038	.08	.056	.03	.008	.09	.017	.09	.182	.07	.074	.09	176
88	.226	.03	.029	.09	.056	.02	.010	.09	.012	.09	.166	.08	.044	.09	178
90	+.233	-.03	-.021	-.09	-.056	+.02	-.011	+.09	+.006	+.09	+.150	+.08	-.013	+.09	180

NOTE. — When the Argument is on the right-hand side of the Table, the sign of the correction is to be reversed.
The Moon's Mean Longitude, ϵ , may be found on page 840.

TABLE IV.

TABLE GIVING THE CORRECTIONS OF THE CONSTANTS A AND B WHICH DEPEND ON THE ARGUMENT $2C$, IN UNITS OF THE FIFTH DECIMAL FOR A , AND OF THE FOURTH FOR B .

C or $C - 180^\circ$	A	B	C or $C - 180^\circ$	A	B	C or $C - 180^\circ$	A	B	C or $C - 180^\circ$	A	B
0°	- 0	-886	45°	-405	+ 0	90°	+ 0	+886	135°	+405	- 0
1	14	885	46	405	31	91	14	885	136	405	31
2	29	883	47	404	61	92	29	883	137	404	61
3	42	881	48	403	93	93	42	881	138	403	93
4	56	877	49	401	124	94	56	877	139	401	124
5	- 70	-872	50	-399	+153	95	+ 70	+872	140	+399	-153
6	84	866	51	396	184	96	84	866	141	396	184
7	98	859	52	393	215	97	98	859	142	393	215
8	112	851	53	389	244	98	112	851	143	389	244
9	125	843	54	385	274	99	125	843	144	385	274
10	-138	-833	55	-380	+303	100	+138	+833	145	+380	-303
11	152	821	56	375	331	101	152	821	146	375	331
12	165	809	57	370	360	102	165	809	147	370	360
13	178	796	58	364	388	103	178	796	148	364	388
14	190	782	59	358	415	104	190	782	149	358	415
15	-202	-767	60	-351	+443	105	+202	+767	150	+351	-443
16	214	751	61	344	470	106	214	751	151	344	470
17	226	734	62	336	495	107	226	734	152	336	495
18	238	716	63	328	520	108	238	716	153	328	520
19	249	698	64	319	545	109	249	698	154	319	545
20	-261	-678	65	-310	+570	110	+261	+678	155	+310	-570
21	271	659	66	301	592	111	271	659	156	301	592
22	282	637	67	291	615	112	282	637	157	291	615
23	291	615	68	282	637	113	291	615	158	282	637
24	301	592	69	271	659	114	301	592	159	271	659
25	-310	-570	70	-261	+678	115	+310	+570	160	+261	-678
26	319	545	71	249	698	116	319	545	161	249	698
27	328	520	72	238	716	117	328	520	162	238	716
28	336	495	73	226	734	118	336	495	163	226	734
29	344	470	74	214	751	119	344	470	164	214	751
30	-351	-443	75	-202	+767	120	+351	+443	165	+202	-767
31	358	415	76	190	782	121	358	415	166	190	782
32	364	388	77	178	796	122	364	388	167	178	796
33	370	360	78	165	809	123	370	360	168	165	809
34	375	331	79	152	821	124	375	331	169	152	821
35	-380	-303	80	-138	+833	125	+380	+303	170	+138	-833
36	385	274	81	125	843	126	385	274	171	125	843
37	389	244	82	112	851	127	389	244	172	112	851
38	393	215	83	98	859	128	393	215	173	98	859
39	396	184	84	84	866	129	396	184	174	84	866
40	-399	-153	85	- 70	+872	130	+399	+153	175	+ 70	-872
41	401	124	86	56	877	131	401	124	176	56	877
42	403	93	87	42	881	132	403	93	177	42	881
43	404	61	88	29	883	133	404	61	178	29	883
44	405	31	89	14	885	134	405	31	179	14	885
45	-405	- 0	90	- 0	+886	135	+405	+ 0	180	+ 0	-886

NOTE. — The Moon's Mean Longitude C , may be found on page 846.

TABLE V.

TABLE GIVING THE CORRECTIONS OF THE CONSTANTS A AND B DEPEND-
ING ON THE SMALL TERMS OF THE NUTATION, IN UNITS OF THE FIFTH
DECIMAL FOR A , AND OF THE FOURTH FOR B .

Arg.	$\zeta - \Gamma'$	$2\odot - 2\Gamma'$	$2\odot - 2\Omega$	$2\odot - \Omega$		$2\Gamma' - \Omega$		Γ'		$3\odot - \Gamma$	
	A.	A.	A.	A.	B.	A.	B.	A.	B.	A.	B.
0	+ 0	+ 0	-0	+ 0	+67	+0	+24	+5	+ 8	-11	- 5
10	23	2	1	+ 4	66	2	24	6	+ 4	10	+ 9
20	46	3	2	9	63	3	23	7	- 2	7	21
30	68	5	2	12	58	4	21	8	8	- 2	27
40	87	6	3	16	51	6	18	8	13	+ 4	25
50	+103	+ 8	-4	+19	+43	+7	+15	+7	-19	+ 8	+17
60	117	9	4	22	34	8	12	6	24	11	+ 5
70	127	9	4	24	23	8	8	4	28	10	- 9
80	133	10	5	25	+12	9	+ 4	+2	30	7	21
90	135	10	5	25	0	9	0	0	31	+ 2	27
100	+133	+10	-5	+25	-12	+9	- 4	-2	-30	- 4	-25
110	127	9	5	24	23	8	8	4	28	8	17
120	117	9	4	22	34	8	12	6	24	11	- 5
130	103	8	4	19	43	7	15	7	19	10	+ 9
140	87	6	3	16	51	6	18	8	13	7	21
150	+ 68	+ 5	-2	+12	-58	+4	-21	-8	- 8	- 2	+27
160	46	3	2	9	63	3	23	7	- 2	+ 4	25
170	+ 23	+ 2	-1	+ 4	66	+2	24	6	+ 4	8	17
180	0	0	0	0	67	0	24	5	8	11	+ 5
190	- 23	- 2	+1	- 4	66	-2	24	4	12	10	- 9
200	- 46	- 3	+2	- 9	-63	-3	-23	-2	+14	+ 7	-21
210	68	5	2	12	58	4	21	-1	16	+ 2	27
220	87	6	3	16	51	6	18	0	16	- 4	25
230	103	8	4	19	43	7	15	+1	16	8	17
240	117	9	4	22	34	8	12	1	16	11	- 5
250	-127	- 9	+5	-24	-23	-8	- 8	+1	+16	-10	+ 9
260	133	10	5	25	-12	9	- 4	0	15	7	21
270	135	10	5	25	0	9	0	0	15	- 2	27
280	133	10	5	25	+12	9	+ 4	0	15	+ 4	25
290	127	9	5	24	23	8	8	-1	16	8	17
300	-117	- 9	+4	-22	+34	-8	+12	-1	+16	+11	+ 5
310	103	8	4	19	43	7	15	-1	16	10	- 9
320	87	6	3	16	51	6	18	0	16	7	21
330	68	5	2	12	58	4	21	+1	16	+ 2	27
340	46	3	2	9	63	3	23	2	14	- 4	25
350	- 23	- 2	+1	- 4	+66	-2	+24	+4	+12	- 8	-17
360	- 0	- 0	+0	- 0	+67	-0	+24	+5	+ 8	-11	- 5
Year.	$\zeta - \Gamma'$	$2\odot - 2\Gamma'$	$2\odot - 2\Omega$	$2\odot - \Omega$		$2\Gamma' - \Omega$		Γ'		$3\odot - \Gamma$	
1865	335.6	221.2	129.7	345.6		124.5		350.3		202.0	
1866	64.4	139.3	167.8	4.5		225.2		31.0		201.3	
1867	153.1	57.5	206.0	23.4		325.9		71.7		200.6	
1868	254.9	337.4	246.3	44.3		66.8		112.4		202.9	
1869	343.6	255.6	284.5	62.2		167.5		153.1		202.2	
1870	72.3	173.8	322.7	81.1		268.2		193.7		201.5	
1871	161.0	91.9	0.9	100.0		8.9		234.4		200.9	
1872	262.8	11.8	41.2	121.0		109.8		275.2		203.1	
1873	351.5	290.0	79.4	139.9		210.5		315.8		202.5	
1874	80.3	208.2	117.7	158.8		311.2		356.5		201.8	
Daily Motion.	13.065	1.749	2.007	2.024		0.276		0.111		2.957	

NOTE. — The arguments given above are for Jan. 0.5 in common years, but for Jan. 1.5 in leap years.

OCCULTATIONS, 1867.

OCCULTATIONS OF STARS AND PLANETS BY THE MOON, VISIBLE IN THE
TERRITORY OF THE UNITED STATES WEST OF THE MISSISSIPPI RIVER.

Date.	Star's Name and Magnitude.	Latitude.	IMMERSION.				EMERSION.				ANGLE FROM VERTEX			
			Longitude				Longitude				Longitude			
			h m 1 30	h 3	h m 3 30	h 3	h m 1 30	h 3	h m 3 30	h 3	h m 1 30	h 3	h m 3 30	h 3
Jan. 12	77 Pisc. pr. 7	30	10 23	10 13	10 1	9 47	11 33	11 27	11 1	11 6	169	165	160	148
		35	10 24	10 15	10 5	9 55	11 29	11 23	11 15	11 2	145	141	136	124
		40	10 28	10 20	10 13	10 8	11 21	11 14	11 4	10 51	120	114	106	94
		45	10 36	10 33	10 37	....	11 7	10 58	10 37	....	88	80	Star	0" N.
16	B.A.C. 1526 6	30	....	....	11 16	10 47	....	....	11 16	11 11	....	Star	1" s.	133
		35	11 31	11 11	10 52	10 34	12 15	12 0	11 46	11 33	197	183	153	131
		40	11 18	11 3	10 46	10 32	12 24	12 10	11 57	11 43	167	156	135	110
		45	11 13	11 0	10 47	10 34	12 26	12 10	12 1	11 49	141	129	117	98
Feb. 12	Rumk. 1238 10	30	9 33	9 12	8 50	8 29	10 24	10 9	9 53	9 39	208	198	167	123
		35	9 22	9 3	8 46	8 32	10 33	10 18	10 3	9 49	176	165	144	113
		40	9 19	9 2	8 45	8 34	10 35	10 22	10 11	9 53	150	141	128	100
		45	9 17	9 3	8 51	8 40	10 32	10 20	10 7	9 54	126	118	103	85
12	α Tauri 1	30	10 35	10 18	9 57	9 33	11 10	10 53	10 38	10 24	222	220	208	178
		35	10 18	10 2	9 42	9 25	11 21	11 7	10 53	10 38	190	186	176	157
		40	10 10	9 55	9 40	9 24	11 22	11 11	10 57	10 44	161	158	147	134
		45	10 5	9 53	9 40	9 27	11 19	11 9	10 58	10 45	137	135	127	116
12	Rumk. 1247	30	13 17	13 13	13 7	12 59	14 12	14 9	14 2	13 53	174	183	192	198
		35	13 10	13 4	12 56	12 47	14 9	14 7	14 2	13 55	155	161	166	172
		40	13 4	12 59	12 51	12 42	14 4	14 2	13 58	13 52	136	140	146	149
		45	13 1	12 55	12 47	12 38	13 55	13 54	13 51	13 46	114	120	125	128
12	Rumk. 1254	30	13 35	13 33	13 30	13 25	14 26	14 23	14 17	14 8	180	189	199	209
		35	13 27	13 24	13 18	13 11	14 24	14 22	14 18	14 11	159	167	173	181
		40	13 26	13 17	13 11	13 2	14 19	14 18	14 15	14 9	138	146	153	159
		45	13 17	13 12	13 5	12 57	14 13	14 12	14 9	14 4	122	127	132	137
13	130 Tauri 6	30	15 42	15 42	15 41	15 39	*16 33	16 35	16 35	16 34	140	150	160	169
		35	15 38	15 37	15 34	15 31	*16 28	16 30	16 31	16 30	125	132	141	151
		40	15 34	15 32	15 29	15 25	16 20	16 26	16 24	16 25	107	115	122	131
		45	15 32	15 29	15 25	15 20	16 11	16 14	16 16	16 16	89	97	105	113
14	26 Geminor. 5½	30	12 53	12 42	12 28	12 12	14 3	13 53	13 39	13 22	159	167	171	173
		35	12 46	12 33	12 19	12 4	13 57	13 49	13 38	13 24	136	143	146	144
		40	12 42	12 29	12 15	12 1	13 50	13 43	13 33	13 20	112	122	123	117
		45	12 41	12 28	12 15	12 2	13 40	13 34	13 25	13 15	96	99	97	94
19	τ Leonis 5	30	11 31	11 22	11 17	11 13	12 45	12 33	12 24	12 17	9	10	11	13
		35	11 34	11 26	11 20	11 16	12 39	12 30	12 22	12 16	355	357	358	0
		40	11 45	11 35	11 28	11 24	12 29	12 24	12 18	12 13	338	342	343	345
		45	12 8	11 55	11 45	11 38	12 8	12 8	12 7	12 5	Star 1'30" N.	312	319	323
21	δ Virgin. tr. 4½	30	12 4	12 0	11 59	*11 59	13 14	13 6	12 59	12 55	21	25	28	31
		35	12 5	12 1	11 59	*11 59	13 13	13 7	13 2	12 59	10	13	17	19
		40	12 11	12 6	12 3	*12 3	13 12	13 6	13 3	13 0	357	1	5	7
		45	12 21	12 14	12 12	*12 10	13 6	13 4	13 1	13 0	341	347	350	354
22	96 Virginis 6½	30	19 26	19 10	18 54	18 40	20 48	20 37	20 21	20 2	127	124	120	115
		35	19 19	19 3	18 48	18 32	20 41	20 30	20 16	20 0	110	107	105	100
		40	19 13	18 57	18 42	18 26	20 32	20 21	20 8	19 54	96	93	89	86
		45	19 7	18 53	18 38	18 24	20 21	20 12	20 1	19 49	81	78	76	74
24	γ Libræ 6	30	16 53	16 43	16 36	16 34	18 24	18 4	17 43	17 24	75	70	71	76
		35	16 52	16 40	16 32	16 28	18 22	18 5	17 48	17 33	63	59	60	63
		40	16 53	16 41	16 33	16 27	18 20	18 5	17 52	17 40	53	51	51	53
		45	16 57	16 45	16 37	16 30	18 16	18 4	17 53	17 43	43	41	43	43
Mar. 9	B.A.C. 755 6	30	9 54	9 44	9 31	9 17	11 2	10 56	10 48	10 37	157	158	157	152
		35	9 56	9 46	9 35	9 23	10 57	10 51	10 43	10 32	135	135	132	126
		40	10 1	9 52	9 43	9 34	10 47	10 41	10 32	10 21	109	108	103	97
		45	10 18	10 12	10 4	....	10 22	10 14	10 4	....	62	57	Star	30" N.

* Below the horizon.

OCCULTATIONS, 1867.

OCCULTATIONS OF STARS AND PLANETS BY THE MOON, VISIBLE IN THE
TERRITORY OF THE UNITED STATES WEST OF THE MISSISSIPPI RIVER.

Date.	Star's Name and Magnitude.	Latitude.	IMMERSION.				EMERSION.				ANGLE FROM VERTEX.			
			Longitude				Longitude				Longitude			
			h 1 30	m 30	h 30	m 30	h 1 30	m 30	h 30	m 30	h 1 30	m 30	h 30	m 30
Mar. 11	75 Tauri 6	30	13 23	13 23	13 22	13 20	14 12	14 15	14 16	14 16	128°	137°	144°	
		35	13 24	13 22	13 20	13 17	14 4	14 8	14 11	14 11	107	116	126	
		40	13 29	13 25	13 21	13 16	13 45	13 54	13 58	14 2	68	85	94	105
		45	13 36	13 36	13 26	13 19	13 36	13 42	13 48	14 2	Star	64	79	
12	111 Tauri 6	30	12 9	12 7	12 6	12 8	12 55	12 49	12 39	12 20	189	200	213	234
		35	11 58	11 54	11 50	11 43	12 54	12 50	12 44	12 34	166	175	183	192
		40	11 50	11 45	11 38	11 30	12 50	12 47	12 42	12 35	147	154	161	167
		45	11 44	11 38	11 31	11 22	12 44	12 42	12 38	12 32	129	136	140	145
12	117 Tauri 6	30	13 59	14 3	13 51	13 59	14 6	14 3	14 3	13 59	226	130° s.	130°	
		35	13 39	13 44	13 31	13 59	14 14	14 11	14 3	13 59	188	202	226	
		40	13 29	13 30	13 32	13 34	14 14	14 13	14 10	14 4	168	176	188	200
		45	13 20	13 20	13 19	13 18	14 10	14 11	14 9	14 6	149	157	164	174
15	29 Cancr 6	30	15 25	15 25	15 24	15 24	16 16	16 14	16 10	16 2	158	166	176	190
		35	15 17	15 15	15 12	15 8	16 12	16 11	16 7	16 1	142	148	156	166
		40	15 8	15 5	15 1	14 56	16 5	16 4	16 2	15 57	126	131	139	146
		45	15 0	14 57	14 52	14 46	15 57	15 57	15 55	15 51	111	117	123	129
26	B.A.C. 6060 6½	30	17 13	16 57	16 44	16 36	18 49	18 29	18 11	17 56	67	57	51	48
		35	17 20	17 3	16 49	16 39	18 45	18 28	18 12	17 59	55	46	41	39
		40	17 27	17 11	16 57	16 46	18 39	18 24	18 10	18 1	41	35	33	32
		45	17 37	17 21	17 7	16 56	18 32	18 20	18 9	18 1	26	24	21	23
Apr. 20	49 Libræ 5½	30	19 18	19 6	18 52	18 35	20 25	20 21	20 13	20 3	160	150	141	133
		35	19 9	18 59	18 45	18 30	20 20	20 15	20 8	19 58	141	132	125	117
		40	19 1	18 52	18 39	18 25	20 13	20 8	19 59	19 49	124	117	109	100
		45	18 55	18 47	18 36	18 22	20 4	19 59	19 50	19 40	108	101	94	87
21	24 Scorp 5	30	12 36	12 31	12 28	12 29	13 58	13 44	13 32	13 21	49	50	55	61
		35	12 39	12 32	12 28	12 27	14 1	13 49	13 39	13 30	39	40	43	47
		40	12 44	12 36	12 32	12 29	14 0	13 51	13 43	13 36	30	32	34	38
		45	12 52	12 43	12 37	12 34	13 59	13 52	13 45	13 40	21	24	26	30
27	1 Capricor. 5½	30	16 11	16 16	16 3	16 14	17 18	17 9	17 4	17 1	29	27	26	27
		35	16 24	16 18	16 14	16 14	17 21	17 13	17 8	17 5	20	18	17	18
		40	16 39	16 32	16 26	16 23	17 21	17 14	17 10	17 7	10	8	8	9
		45	16 59	16 50	16 42	16 37	17 17	17 12	17 9	17 8	353	352	355	357
30	Venus	30	17 34	17 33	17 45	17 45	18 36	18 31	18 30	18 29	30	26	25	25
		35	17 46	17 45	17 45	17 45	18 40	18 35	18 33	18 33	23	17	16	16
		40	17 59	17 58	17 58	17 59	18 44	18 39	18 36	18 36	15	9	7	7
		45	18 15	18 14	18 14	18 15	18 45	18 39	18 36	18 35	3	356	352	351
May 6	130 Tauri 6	30	10 40	10 42	10 44	10 45	11 26	11 27	11 27	11 24	162	171	182	193
		35	10 33	10 34	10 35	10 34	11 23	11 25	11 25	11 24	144	152	161	171
		40	10 28	10 28	10 26	10 24	11 18	11 20	11 21	11 21	127	135	144	153
		45	10 23	10 22	10 20	10 17	11 12	11 14	11 15	11 15	113	120	127	135
11	49 Leonis 6	30	9 4	8 49	8 37	8 25	10 29	10 12	9 53	9 29	115	112	102	86
		35	8 56	8 41	8 27	8 15	10 20	10 6	9 50	9 31	94	90	82	72
		40	8 52	8 37	8 22	8 10	10 10	9 59	9 45	9 31	74	72	66	59
		45	8 52	8 38	8 23	8 11	9 59	9 51	9 41	9 29	54	54	51	47
12	Leonis 5	30	10 23	10 1	9 42	9 27	11 34	11 24	11 11	10 55	70	72	68	60
		35	10 27	10 4	9 43	9 26	11 18	11 11	11 1	10 49	46	50	48	44
		40	10 38	10 7	9 44	9 27	10 52	10 55	10 49	10 40	8	24	28	27
		45	10 26	9 53	9 34	9 34	10 26	10 34	10 29	10 29	Star	5	8	
24	18 Aquarii 6½	30	12 37	12 40	12 44	12 44	13 28	13 25	13 24	13 24	17	10	5	1
		35	12 49	12 52	12 58	12 58	13 31	13 27	13 23	13 21	8	359	350	341
		40	13 3	13 11	13 19	13 19	13 32	13 23	13 19	13 19	355	339	Star	
		45	13 27	13 11	13 19	13 19	13 27	13 23	13 19	13 19	Star	15° n. 30° n.		

* Below the horizon.

OCCULTATIONS, 1867.

OCCULTATIONS OF STARS AND PLANETS BY THE MOON, VISIBLE IN THE
TERRITORY OF THE UNITED STATES WEST OF THE MISSISSIPPI RIVER.

Date.	Star's Name and Magnitude.	Latitude.	IMMERSION.				EMERSION.				ANGLE FROM VERTEX.				
			Longitude				Longitude				Longitude				
			h 1 30	m 30	h 3	m 30	h 1 30	m 30	h 3	m 30	h 1 30	m 30	h 3	m 30	
May 30	B.A.C. 830 6	30	17 59	17 50	*17 49	17 59	18 8	18 13	*18 17	Star 0 ^h s.	118	109	104		
		35	17 50	17 48	*17 49	18 21	18 23	18 26	*18 28	107	100	95	93		
		40	17 52	17 51	17 52	*17 54	18 34	18 35	18 36	18 38	98	91	87	84	
		45	17 56	17 55	17 56	*17 58	18 46	18 45	18 45	18 46	92	86	82	80	
June 6	♋ Leonis 6	30	*12 38	12 40	12 41	12 40	.....	.....	*13 33	13 35	.....	.....	130	135
		35	*12 33	12 35	12 34	12 33	.....	*13 24	13 27	13 29	.....	110	115	121
		40	12 29	12 29	12 28	12 27	.....	*13 16	13 19	13 21	.....	96	99	105
		45	12 25	12 24	12 23	12 20	*13 4	13 7	13 10	13 12	78	81	87	93	
22	♈ Aquarii 6	30	16 57	16 34	16 15	16 3	17 35	17 29	17 19	17 9	168	144	119	103	
		35	16 53	16 34	16 20	16 9	17 55	17 45	17 34	17 22	156	132	113	98	
		40	16 53	16 38	16 25	16 15	18 7	17 55	17 43	17 32	146	124	107	93	
		45	16 56	16 43	16 32	16 23	18 14	18 3	17 51	17 39	136	118	102	88	
28	♉ Tauri 6	30	17 40	*17 30	17 40	17 50	17 56	Star 15 ^h s.	111	102	94	88
		35	17 38	17 29	17 28	*17 30	17 56	18 0	18 4	18 7	113	102	94	88	
		40	17 33	17 31	17 31	*17 33	18 11	18 12	18 14	18 16	99	90	84	81	
		45	17 36	17 35	17 35	17 37	18 23	18 23	18 24	18 25	90	84	79	75	
July 11	♎ Libræ 5½	30	14 19	14 5	13 51	13 35	14 55	14 53	14 49	14 39	199	187	176	168	
		35	14 2	13 51	13 38	13 23	14 57	14 54	14 49	14 40	176	165	159	150	
		40	13 51	13 40	13 28	13 14	14 54	14 51	14 44	14 35	156	148	139	133	
		45	13 41	13 31	13 20	13 5	14 49	14 44	14 39	14 30	139	133	127	121	
15	♐ Sagittarii 5½	30	14 42	14 27	14 7	13 49	16 9	15 53	15 34	15 11	130	111	93	71	
		35	14 45	14 32	14 17	14 0	16 2	15 46	15 27	15 3	111	94	75	53	
		40	14 50	14 40	14 29	14 17	15 52	15 34	15 12	14 47	90	72	55	26	
		45	14 57	14 53	14 52	.....	15 40	15 18	14 52	.....	69	46	Star 30 ⁿ .	
Aug. 7	♎ Libræ 6	30	16 17	15 58	15 43	16 17	16 21	16 18	Star 15 ^h s.	206	193		
		35	15 57	15 48	15 37	15 25	*16 27	16 29	16 27	16 22	200	187	179	170	
		40	15 41	15 33	15 24	15 12	*16 29	16 28	16 25	16 20	174	167	158	152	
		45	15 29	15 22	15 13	15 2	*16 26	16 24	16 20	16 14	155	149	143	136	
20	B.A.C. 830 6	30	18 2	17 51	17 42	17 35	19 6	18 53	18 39	18 25	181	149	111	81	
		35	17 57	17 43	17 32	17 22	19 16	19 1	18 47	18 32	160	135	104	77	
		40	17 54	17 38	17 24	17 13	19 20	19 6	18 51	18 35	140	119	93	68	
		45	17 54	17 34	17 17	17 4	19 20	19 6	18 51	18 36	119	107	77	57	
22	♉ Tauri 4½	30	14 10	14 11	14 13	*14 17	15 9	15 6	15 4	15 4	41	34	27	23	
		35	14 17	14 18	14 21	*14 24	15 15	15 11	15 9	15 7	34	27	21	15	
		40	14 26	14 28	14 30	14 34	15 20	15 15	15 12	15 10	27	19	12	6	
		45	14 37	14 39	14 42	14 47	15 25	15 19	15 14	15 10	21	11	3	352	
22	♉ Tauri 4½	30	14 12	14 11	14 12	*14 15	15 6	15 5	15 5	15 6	61	54	48	42	
		35	14 17	14 17	14 18	*14 21	15 15	15 13	15 11	15 11	54	48	42	37	
		40	14 24	14 24	14 26	14 28	15 23	15 19	15 17	15 16	50	41	35	29	
		45	14 32	14 33	14 35	14 37	15 30	15 25	15 23	15 21	43	34	29	22	
22	♉ Tauri 5½	30	15 13	15 6	15 3	15 2	15 48	15 49	15 49	15 50	100	87	78	69	
		35	15 13	15 8	15 6	15 5	16 3	16 1	15 59	15 59	87	77	68	61	
		40	15 17	15 13	15 12	15 11	16 15	16 12	16 9	16 7	79	70	62	56	
		45	15 23	15 20	15 18	15 19	16 25	16 23	16 17	16 14	73	64	57	50	
22	B.A.C. 394 7	30	15 12	15 10	15 11	15 13	16 16	16 9	16 3	15 58	34	25	16	7	
		35	15 21	15 20	15 22	15 25	16 21	16 12	16 5	15 59	26	15	5	354	
		40	15 32	15 32	15 35	15 43	16 24	16 14	16 5	15 54	17	6	352	332	
		45	15 46	15 49	15 58	.....	16 24	16 11	15 58	.....	6	348	Star 30 ⁿ .	
22	Runk. 1227 7	30	15 43	15 28	15 23	15 43	15 55	15 59	Star 15 ^h s.	104	93		
		35	15 44	15 33	15 27	15 24	16 7	16 10	16 11	16 11	116	100	88	80	
		40	15 41	15 34	15 30	15 29	16 26	16 24	16 22	16 21	100	88	80	72	
		45	15 44	15 39	15 35	15 34	16 40	16 36	16 33	16 31	93	83	74	68	

* Below the horizon.

OCCULTATIONS, 1867.

OCCULTATIONS OF STARS AND PLANETS BY THE MOON, VISIBLE IN THE
TERRITORY OF THE UNITED STATES WEST OF THE MISSISSIPPI RIVER.

Date.	Star's Name and Magnitude.	Latitude. °	IMMERSION.				EMERSION.				ANGLE FROM VERTEX.			
			Longitude				Longitude				Longitude			
			h m 1 30	h 2	h m 2 30	h 3	h m 1 30	h 2	h m 2 30	h 3	h m 1 30	h 2	h m 2 30	h 3
Aug. 22	85 Tauri 6	30	15 58	15 41	15 35	15 58	16 10	16 13	16 13	Star	5°a.	102	90	
		35	15 59	15 47	15 40	15 37	16 23	16 25	16 25	16 25	118	100	89	79
		40	15 56	15 48	15 43	15 41	16 42	16 39	16 37	16 35	102	90	80	72
		45	15 59	15 53	15 49	15 47	16 55	16 51	16 47	16 44	94	83	74	66
22	Rumk. 1235	30	16 20	16 7	15 59	15 55	16 54	16 53	16 51	16 49	105	89	77	67
		35	16 17	16 8	16 3	16 0	17 13	17 7	17 2	16 59	94	79	67	59
		40	16 21	16 13	16 9	16 7	17 25	17 17	17 11	17 7	84	72	61	53
		45	16 26	16 20	16 16	16 15	17 34	17 26	17 20	17 14	78	65	56	36
22	Rumk. 1406 7	30	16 38	16 32	16 28	16 27	17 53	17 41	17 30	17 20	46	33	22	10
		35	16 47	16 42	16 39	16 39	17 58	17 44	17 32	17 21	41	25	12	358
		40	16 58	16 54	16 54	16 58	18 0	17 45	17 31	17 17	33	16	359	340
		45	17 12	17 13	17 21	.....	17 57	17 41	17 21	.....	19	358	Star	.....
22	α Tauri 1	30	18 0	17 49	17 42	17 38	19 21	19 3	18 46	18 31	68	38	18	3
		35	18 8	18 0	17 56	17 56	19 22	19 3	18 45	18 27	60	30	8	347
		40	18 20	18 16	18 20	18 22	19 16	18 57	18 33	18 22	40	7	340	Star
		45	18 49	18 44	.....	.....	18 59	18 44	.....	.....	355	Star	1°15'	.....
Sept. 6	B.A.C. 6060 6½	30	11 56	11 48	11 37	11 23	13 6	12 59	12 49	12 33	135	122	109	93
		35	11 56	11 49	11 41	11 31	12 57	12 48	12 35	12 18	113	99	85	68
		40	11 57	11 53	11 52	11 50	12 45	12 33	12 16	11 50	91	75	56	Star
		45	12 3	12 8	.....	.....	12 27	12 8	.....	.....	63	Star	30' n.	15° n.
12	78 Aquarii 6	30	11 13	10 59	10 48	10 39	12 44	12 26	12 8	11 52	113	86	64	48
		35	11 22	11 9	10 58	10 50	12 47	12 29	12 11	11 55	101	78	57	40
		40	11 31	11 21	11 11	11 3	12 49	12 31	12 13	11 57	90	68	48	33
		45	11 41	11 32	11 25	11 19	12 48	12 30	12 12	11 56	79	58	38	21
12	82 Aquarii 6	30	.....	.....	17 15	16 42	.....	.....	17 15	17 25	.....	.....	Star	220
		35	17 18	17 3	16 48	16 32	17 37	17 40	17 39	17 36	237	220	207	193
		40	17 0	16 51	16 40	16 27	17 49	17 48	17 45	17 40	200	191	182	174
		45	16 51	16 44	16 35	16 25	17 51	17 49	17 45	17 39	177	170	161	152
16	B.A.C. 741 6½	30	15 14	15 2	14 53	14 49	16 40	16 21	16 0	15 39	125	86	48	17
		35	15 23	15 14	15 9	15 17	16 40	16 20	15 57	15 24	104	70	32	345
		40	15 37	15 33	15 39	.....	16 35	16 13	15 39	.....	79	47	Star	.....
		45	15 59	15 59	.....	.....	16 21	15 59	.....	.....	44	Star	30' n.	.....
18	48 Libræ 6	30	14 48	14 32	14 23	14 18	15 23	15 21	15 18	15 14	112	92	79	68
		35	14 45	14 34	14 27	14 23	15 42	15 35	15 29	15 24	99	83	71	60
		40	14 48	14 39	14 33	14 30	15 55	15 46	15 38	15 32	92	77	65	55
		45	14 53	14 46	14 41	14 38	16 4	15 55	15 47	15 40	85	72	60	50
18	γ Libræ 4	30	.....	17 22	16 44	16 24	.....	17 22	17 26	17 21	.....	Star	5°a.	117
		35	17 21	16 59	16 40	16 27	18 5	17 55	17 44	17 34	171	136	108	87
		40	17 13	16 56	16 42	16 31	18 21	18 8	17 56	17 44	151	127	114	82
		45	17 12	16 59	16 47	16 38	18 28	18 15	18 3	17 51	132	114	94	76
Oct. 16	B.A.C. 1526 6	30	13 49	13 41	13 35	13 33	15 7	14 53	14 41	14 30	52	37	25	13
		35	13 57	13 50	13 46	13 45	15 11	14 57	14 44	14 32	47	30	17	4
		40	14 7	14 2	14 0	14 2	15 12	14 58	14 43	14 29	38	21	4	347
		45	14 22	14 19	14 25	14 23	15 9	14 53	14 32	14 23	24	3	335	Star
19	5 Cancri 6	30	15 34	15 28	15 24	15 23	16 47	16 36	16 27	16 21	27	22	17	12
		35	15 39	15 34	15 31	15 30	16 49	16 39	16 29	16 22	18	12	6	359
		40	15 48	15 43	15 41	15 42	16 49	16 38	16 29	16 21	8	360	352	345
		45	16 1	15 58	15 58	16 7	16 45	16 34	16 23	16 7	352	343	333	Star
Nov. 6	81 Aquarii 6	30	8 40	8 15	7 56	7 43	9 31	9 24	9 13	8 59	178	146	125	102
		35	8 37	8 17	8 1	7 49	9 46	9 36	9 23	9 10	164	138	116	97
		40	8 37	8 22	8 8	7 57	9 56	9 44	9 31	9 17	151	130	110	92
		45	8 40	8 27	8 15	8 5	10 1	9 49	9 37	9 24	138	119	101	86

* Below the horizon.

OCCULTATIONS, 1867.

OCCULTATIONS OF STARS AND PLANETS BY THE MOON, VISIBLE IN THE
TERRITORY OF THE UNITED STATES WEST OF THE MISSISSIPPI RIVER.

Date.	Star's Name and Magnitude.	Latitude.	IMMERSION.				EMERSION.				ANGLE FROM VERT.			
			Longitude				Longitude				Longitude			
			h m 1 30	h 2	h m 2 30	h 3	h m 1 30	h 2	h m 2 30	h 3	h m 1 30	h 2	h m 2 30	h 3
Nov. 10	B.A.C. 830 6	30	h m 17 48	h m	h m	h m	h m 17 48	h m	h m	h m	Star	130° s.	.....	.....
		35	17 30	17 26	17 19	17 6	18 1	17 55	17 48	17 40	217	223	225	224
		40	17 16	17 11	17 3	16 53	18 6	18 2	17 57	17 50	188	191	191	190
		45	17 7	17 2	16 54	16 45	18 5	18 2	17 58	17 52	164	166	167	165
12	B.A.C. 1391 5	30	11 17	11 4	10 57	10 53	12 5	12 0	11 55	11 51	95	80	67	58
		35	11 17	11 7	11 2	10 58	12 19	12 12	12 5	11 59	86	72	60	50
		40	11 21	11 14	11 9	11 6	12 30	12 21	12 12	12 5	81	66	54	44
		45	11 28	11 21	11 17	11 15	12 37	12 28	12 19	12 12	74	60	49	39
12	α Tauri 1	30	14 30	14 8	13 48	13 31	15 20	15 6	14 53	14 41	194	164	112	84
		35	14 22	14 4	13 48	13 35	15 32	15 18	15 3	14 50	165	139	105	80
		40	14 20	14 5	13 52	13 41	15 37	15 23	15 9	14 55	141	121	97	73
		45	14 21	14 9	13 58	13 50	15 37	15 24	15 11	14 58	119	101	83	63
17	B.A.C. 3345 6	30	18 41	18 24	18 9	17 56	20 6	19 51	19 33	19 16	82	66	43	32
		35	18 42	18 24	18 10	17 58	19 56	19 44	19 30	19 15	57	46	32	23
		40	18 47	18 30	18 15	18 3	19 43	19 34	19 23	19 11	31	24	17	11
		45	19 11	18 42	18 27	18 14	19 11	19 17	19 11	19 2	Star	354	355	354
19	89 Leonis 6	30	19 31	.....	.....	.....	19 31	.....	.....	.....	Star	115° s.	.....	.....
		35	19 4	19 3	19 2	.....	19 50	19 24	19 2	.....	95	101	Star	45° s.
		40	18 53	18 46	18 40	18 36	19 59	19 42	19 26	19 13	79	78	79	82
		45	18 48	18 40	18 40	18 29	20 1	19 48	19 36	19 25	66	64	64	65
Dec. 5	10 Ceti 6	30	.....	.....	.....	13 22	.....	.....	.....	13 22	.....	Star	.....	Star
		35	.....	13 37	13 19	12 59	.....	13 37	13 43	13 42	.....	10° s.	232	216
		40	13 20	13 12	13 1	12 48	14 0	13 58	13 55	13 51	211	206	199	190
		45	13 8	13 2	12 53	12 43	14 4	14 2	13 58	13 53	183	180	175	166
7	64 Ceti 6½	30	14 29	14 18	14 4	13 47	15 10	15 4	14 57	14 49	219	218	213	206
		35	14 17	14 8	13 55	13 41	15 15	15 10	15 3	14 55	191	190	186	180
		40	14 11	14 2	13 52	13 40	15 15	15 11	15 4	14 56	166	165	163	156
		45	14 7	14 0	13 51	13 41	15 12	15 7	15 1	14 53	145	142	140	135
7	β Ceti 4½	30	15 14	15 8	15 0	14 49	16 13	16 11	16 6	16 0	175	178	180	179
		35	15 10	15 5	14 57	14 48	16 10	16 8	16 5	15 59	153	156	158	157
		40	15 9	15 4	14 57	14 49	16 5	16 3	15 59	15 54	131	133	133	132
		45	15 11	15 7	15 1	14 54	15 55	15 53	15 49	15 44	107	109	108	106
9	Rumk. 1103 7	30	16 36	16 29	16 20	16 7	17 33	17 29	17 23	17 15	177	181	183	181
		35	16 31	16 24	16 15	16 3	17 31	17 28	17 22	17 15	156	160	159	157
		40	16 27	16 21	16 12	16 2	17 26	17 23	17 18	17 11	135	138	138	135
		45	16 26	16 19	16 12	16 3	17 17	17 14	17 10	17 3	112	114	115	111
15	B.A.C. 3538 6½	30	.....	.....	.....	.....	.....	.....	.....	.....	Star	.....	.....	.....
		35	16 37	.....	.....	.....	16 37	.....	.....	.....	1° s.	.....	.....	.....
		40	16 10	16 2	15 55	15 49	17 0	16 42	16 27	16 14	95	93	93	99
		45	16 1	15 52	15 45	15 39	17 7	16 54	16 41	16 31	80	77	75	73
15	44 Leonis 6	30	18 11	18 10	18 5	.....	19 5	18 34	18 5	.....	144	134	115° s.	.....
		35	17 56	17 47	17 39	17 33	19 7	18 47	18 24	17 59	120	111	104	102
		40	17 48	17 36	17 26	17 17	19 4	18 49	18 32	18 15	100	95	87	82
		45	17 43	17 31	17 21	17 11	19 0	18 47	18 34	18 21	83	79	74	69
15	B.A.C. 3562 6½	30	18 20	18 13	18 18	.....	19 22	18 57	18 18	.....	142	133	115° s.	.....
		35	18 7	17 56	17 46	17 39	19 22	19 3	18 42	18 19	120	112	101	96
		40	17 59	17 46	17 36	17 26	19 17	19 3	18 46	18 29	98	94	86	80
		45	17 54	17 42	17 32	17 22	19 12	19 0	18 47	18 33	81	78	72	67
18	κ Virginis 6	30	16 51	.....	.....	.....	16 51	.....	.....	.....	Star	130° s.	.....	.....
		35	16 34	16 36	16 41	.....	17 10	16 54	16 41	.....	80	92	20° s.	.....
		40	16 25	16 23	16 22	16 22	17 23	17 13	17 5	16 59	60	64	68	74
		45	16 23	16 21	16 19	16 18	17 30	17 21	17 15	17 11	50	52	54	55

* Below the horizon.

